WORKBENCH

35c / SEPTEMBER/OCTOBER/1962

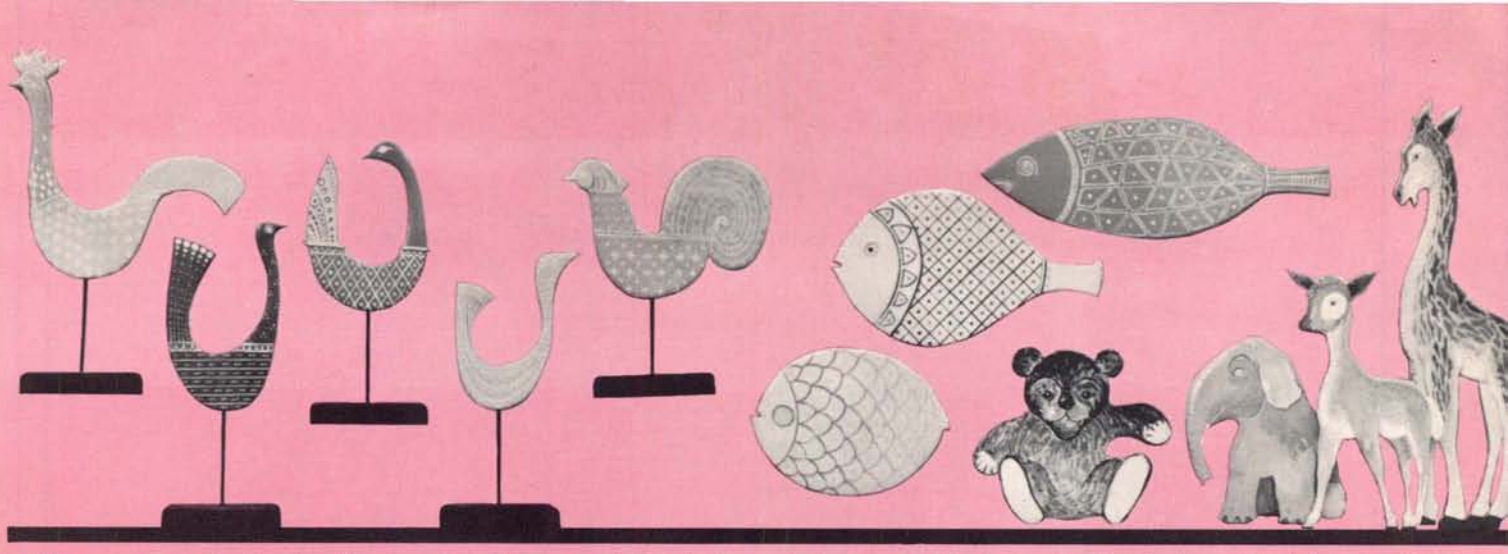
Three-Cornered Coffee Table

Range Top Furnace

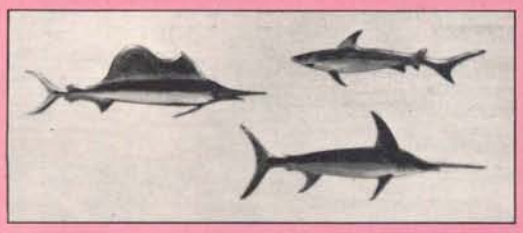
Latticed Wall Rack

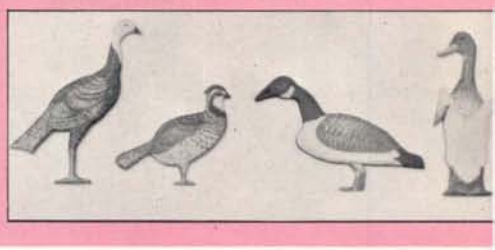
Applying Asphalt Roofing

Installing Hardwood Flooring



These are wood cut-outs. You can buy them or cut the designs yourself. We'll show you how to color them and apply the ceramic-like Castoglas finish. The examples shown above and below are part of a collection being offered for the first time. This is a truly exciting project and you can easily adapt the basic method to your own ideas.

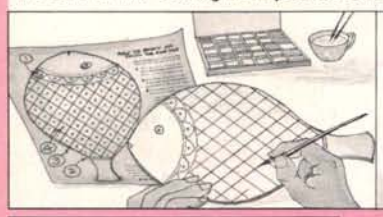


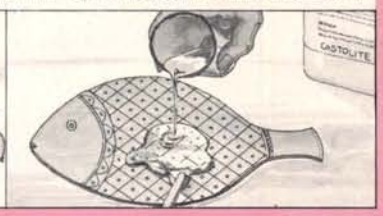


YOU CAN MAKE ALL THESE YOURSELF

For your Home, For Gifts, For Extra Money

The entire family will enjoy handcrafting these delightful stylized birds, zoo animals and authentic fish and bird designs. They are fun to make and to use to decorate the children's room, the kitchen and dining room, the den and recreation area, and the living room as well. You can make all of the things shown on this page in your own kitchen or home workshop. Scissors, knife, brush, spoon . . . these are the only tools needed. No heat or pressure is required. Materials for individual items cost as little as twenty cents. The sketches below illustrate the simple method of applying the colors. The Castoglas is poured over the top. It hardens within one hour.





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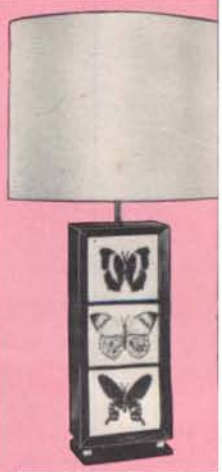

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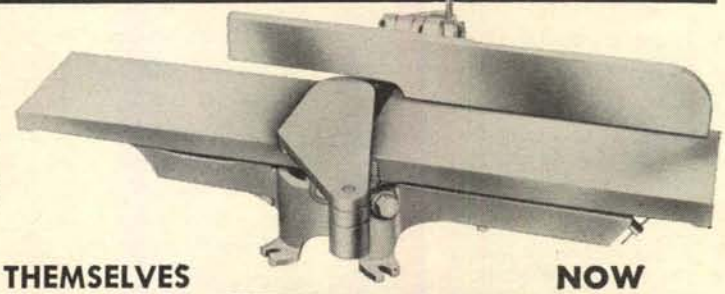

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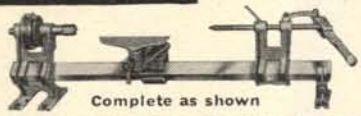

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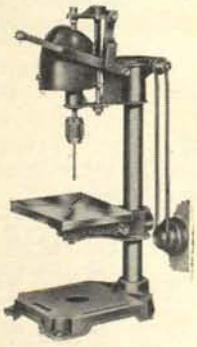

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WORKBENCH volume 18 number 5

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Walt Frisbie, Photographer

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WORKBENCH is published bimonthly by Modern Handcraft, Inc., 543 Westport Road, Kansas City 11, Missouri. Second class postage paid at Kansas City, Missouri, and additional mailing offices. Thirty-five cents a copy. Annual subscription $2 in the United States and its possessions; $2.50 in Canada; Foreign subscriptions, $2.50. Six weeks advance notice required for change of subscription address. Both old and new addresses must be given, and request marked for Circulation Department, WORKBENCH. Printed in the U. S. A., Copyright by Modern Handcraft, Inc., 1962. **Postmaster: Send form 3579 to: Modern Handcraft, Inc., 543 Westport Rd., Kansas City 11, Mo.**

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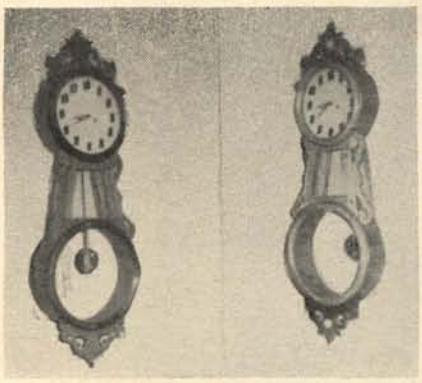
LETTERS TO THE EDITOR



Dear Mr. Hedden:

While I have been a subscriber to WORKBENCH for some time, a friend of mine who is a clock collector bought the Jan.-Feb. issue on a newsstand and sent it to me because he knows I am interested in clocks. He, B. S. Crocker of Longview, Tex., is a collector and has hundreds of antique clocks. I am more interested in repairing and restoring. However, am sending some photos of clocks I have made, as well as some hand carvings. Have a well equipped shop, from a lathe that must be 75 years old down to a brand-new carving machine I have not yet learned to operate. Would like to see some articles on wood carving.
Shaw McKay, Gilmer, Tex.

Dear Mr. McKay:

We have room for just one photo of two of the many clocks you have made. Judging by the excellent craftsmanship and great number of clocks and carvings you have spent many happy hours in your workshop. We will publish more articles on wood carving; quite a number of our readers are requesting them.

Gentlemen:

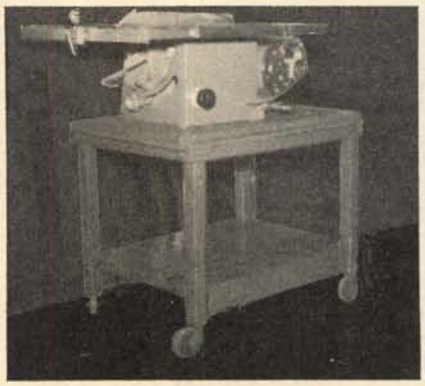
In the May-June issue you show milk cases being used to assist in cutting wood panels. I am sure no milk dealer appreciates your suggestion that you borrow them. We all know that things of this sort borrowed seldom come back. The loss of cases is large enough without giving the public more ideas as to how they can be used. Why not call your milk company and see how they feel about it?
Iver Mikkelesen, President, Orbaek Farm, Inc., Pleasantville, N. Y.

Dear Mr. Mikkelesen:

Our apologies to the dairy industry; we did not mean to encourage borrowing of milk cases that would not be returned. We recommend to our readers our alternate suggestions of the use of plywood boxes or small sawhorses made in the shop.

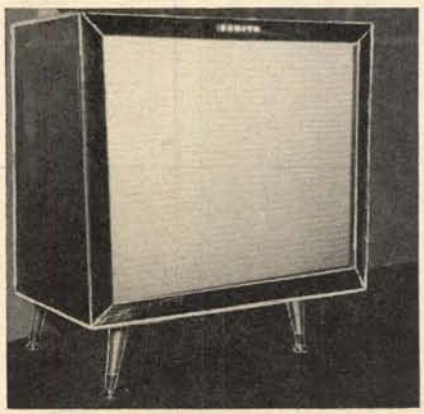
Dear Sir:

At last found time to send you photos of the speaker cabinet I made by modifying a television cabinet. Also a shot of my "dado machine," which is an AMT table saw in which I constantly keep a dado blade, so I don't have to change blades in my big table saw.
Earl Measure, Allston, Mass.



Dear Mr. Measure:

Thanks for the idea of keeping an American Machine and Tool Co. table saw set up for dadoing. We also like the stand it is on; a steel table once used with tabulating cards for an electronic sorting machine. With quite a few old television sets around we know that a lot of them would make fine speaker cabinets.



Gentlemen:

In reply to a question recently raised pertaining to acoustical ceiling tile attachment we note in your May-June, 1962 edition (Research Department), reference to Underwriters' Laboratories, Inc.

One might infer from your answer to the question about the adhesive used in securing the acoustical tile that it was the adhesive itself that burned. This was not specifically the case. Rather it was the fact that the adhesive lost its tack, thereby allowing the acoustical tile to fall to the floor. You can readily appreciate that the acoustical tile would burn with much greater intensity if an unprotected back side was exposed.

It is the consensus of various authorities in the field that had the acoustical tile not fallen the fire might not have been as intense. Thus, if the tile were mechanically fastened, the chances of it falling and thereby contributing more to a fire would not be as great. Perhaps, if a person is concerned about fire it would be best to advise them to use a "Labeled" tile having a low flame spread.
A. A. Briber, Senior Project Engineer, Fire Protection Dept., Underwriters' Laboratories, Inc., Northbrook, Ill.

Dear Mr. Briber:

Thank you very much for the information on the acoustical tile, and correcting the impression that it was the adhesive that burned.

Dear Readers:

Our Research Department has a request: They answer dozens of letters a week, providing information on everything from how to clean old brass, to what size beam is required to properly support the ceiling over a wide door, or how to patch concrete. The problem is that you readers do not send enough information with your requests for help. How wide is the span over the door, how high is the door? How old is the brass, is it red or yellow brass? Is the concrete old, new; was it frozen, is it reinforced?

The more information you send, the more accurate the answers from the Research Department, and the fewer letters that will be required to answer the problems.

Jay W. Hedden

Jay W. Hedden, Editor

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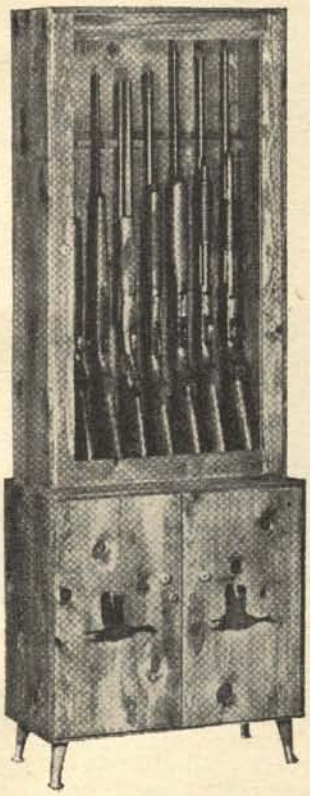
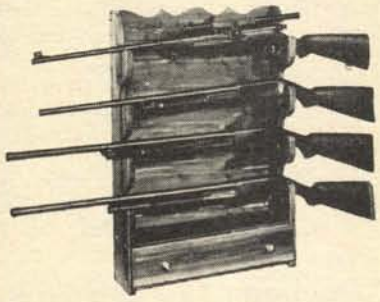
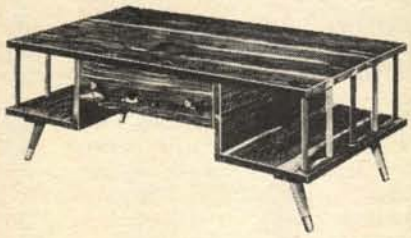


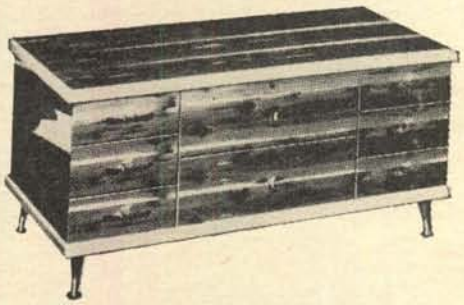
GUN CABINET No. 707
The knotty pine "Pioneer" gun cabinet holds eight guns. Bottom storage compartments for ammunition and other equipment equipped with two locks. Brass ferrules on legs. Overall size 27" wide, 15½" deep, 83" high. Glass for door not included.



GUN RACK No. 404
This four gun rack with full width drawer for ammunition and cleaning gear is all cedar. Complete; ready to assemble, screws, brass pulls and safety lock included. 32" high, 21½" wide.



COCKTAIL TABLE No. M
Top 20" x 44". Stands 15" high. Has useful drawer with plywood bottom. Brass pulls.



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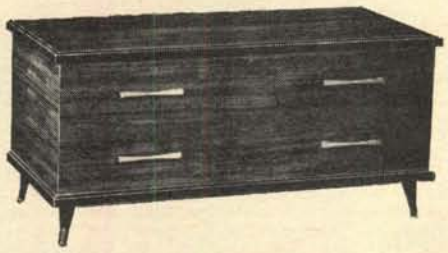
The "Astronaut" with simulated drawers and brass pulls has a handsome modernistic style. Cedar legs have brass ferrules. Size 20" wide, 46½" long, 21" high. Five ply top and front.



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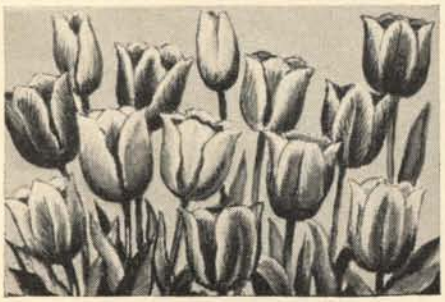
Septic Tank Trouble?

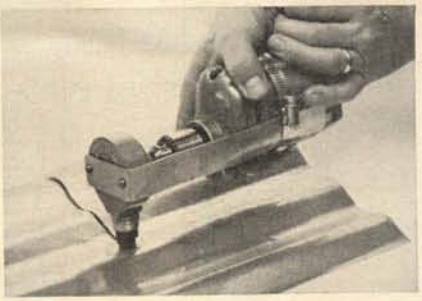
Northel Reactivator works to keep septic tank and cesspool clean. A bacterial concentrate breaks up solids and grease—works to prevent overflow, back-up, odors. Regular use can save costly pumping or digging. Simply mix dry powder in water, flush down toilet. Non-poisonous, non-caustic. Guaranteed to reactivate septic tank, cesspool. Six months' supply (23 ozs.) only $2.95 postpaid. Northel Distributors, WM-9, P.O. Box 1103, Minneapolis 40, Minn.



100 Imported Tulip Bulbs . . . $1.98

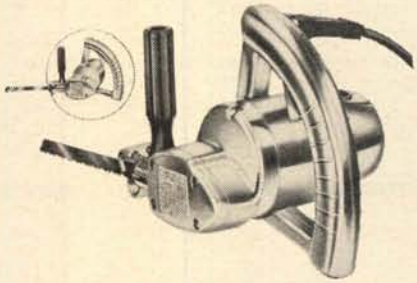
100 Healthy hardy med. size (2½" circumference) Denmark fall planting stock tulips only $1.98 (200 only $3.79). 12 Dutch Muscari bulbs, lovely blue, Free of extra cost. Ass't colors, varieties. Guar. many blooms 1st season, normal bloom 2nd season and for 5 years or replacement free. If C.O.D. postage extra. Cash orders 40¢ and we ship postpaid. Satisfaction or return in 10 days for purchase price refund. Michigan Bulb Co., Dept. MG 1608, Grand Rapids 2, Mich.

Metal-Cutting Attachment



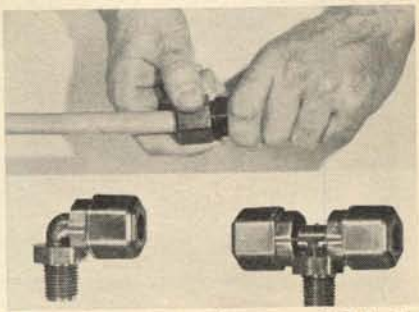
THIS ATTACHMENT fits any ¼-in. drill motor, cuts on a punch-and-die principle, leaving a narrow path. Material is left with clean edge, no burrs or deformation. Nibblex is complete package consisting of unit, holding bracket, handle, side punch and spare punch and die. Sells for $30 from Hedstrom Tool Co., P.O. Box 319, Montclair, N. J.

"Freehand" Electric Saw



DESIGNED TO GET INTO hard-to-reach spots, this tool works like a powered keyhole saw, can cut through a 6 x 6 almost as fast as a chain saw. Ideal for plunge-cutting into walls for installing electric outlets and the like. Cuts up to ½-in. steel. "Zipp" saw Model 920 is $44.95, made by Wen Products, Inc., 5810 Northwest Highway, Chicago.

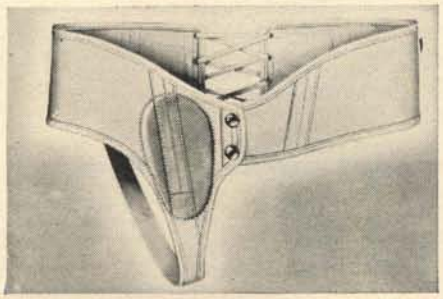
New Plastic Fittings



NO CLAMPS, cement or special tools are required to install these plastic fittings, designed to be used on plastic, copper or aluminum tubing. Tubing is inserted in the fitting, the cap is tightened by hand. Good for gases and liquid, pressure or vacuum. For catalog: D & G Plastics Co., Box 214, Kent, Ohio.

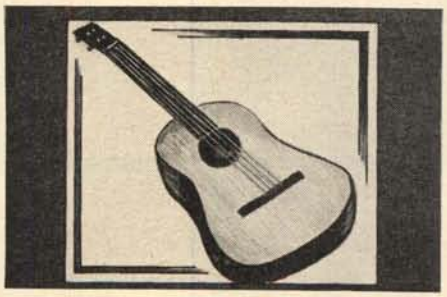
Remover For Antiques

DEVELOPED FOR REFINISHING antiques, this paint remover is claimed to remove up to eight coats of oil-base paints, or varnish with no scraping or sanding. Also effective on "buttermilk" paints. "Solventique" is a powder that you mix with water. $2 ppd. from Antique Corner, Inc., Box 58, South Bend 24, Indiana.



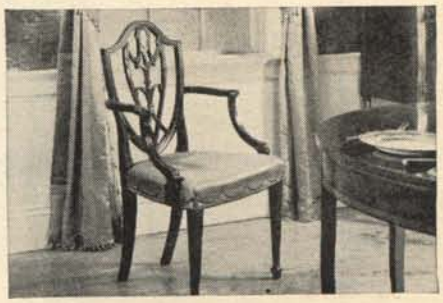
Patented Rupture-Easer®

No fitting required. A strong, form-fitting washable support for reducible inguinal hernia. Back lacing adjustable. Snaps up front. Adjustable leg strap. Soft, flat groin pad. No steel or leather bands. For men, women, children. Send measurement around the lowest part of abdomen and state right, left side or double. Single models, $4.95; double models, $5.95 postpaid. Piper Brace Company, Dept. WB-92, 811 Wyandotte, Kansas City 5, Mo.



Build This Baritone Ukulele

This baritone ukulele is tuned and played like the first four strings of the guitar. A rich, mellow tone, from an instrument only slightly larger than the standard ukulele. An exciting project for the do-it-yourselfer. Sounds more like a guitar than a ukulele. Full size plans include detailed instructions, construction tips, sources for special woods and materials. Plans are just $2.00 from: Ukulele, Workbench, Dept. 1081, 543 Westport Rd., Kansas City 11, Mo.



Hepplewhite Chair Plans

For the craftsman who is interested in building the unusual, here are full-size plans for making a reproduction of a Hepplewhite chair. Plans were made directly from the original chair, built about 1790, now in a museum. Included are full instructions, sources for the special woods required. Plans show how to make chair with or without arms. Cost is $3.00 from Hepplewhite, Dept. 1080, 543 Westport Road, Kansas City 11, Mo.

"Upswing" Gate

GATE CAN BE BUILT IN ANY size from 2 x 2 ft. to 14 ft. long and 5 ft. high, lifts up as shown. Can be adjusted to stay in any position. Has plastic friction catches. Hardware is $10 from Mr. Wood Sales, 641 10th St., Sturgis, South Dakota.

Vacation Homes

RANGING IN PRICE FROM $995 to $2,495 the pre-cut homes listed in this booklet come as a package complete with dimension lumber, laminated beams, doors, hardware, even the nails. The simplest cabin requires about 35 hrs. to erect, the more elaborate require about 160 hrs. Send 50 cents for booklet to: "Free-Time" Homes, Potlatch Forests, Inc., Lewiston, Idaho.

"Glide-Out" Shelf

NEW SHELF FITS ALL base cabinets from 10 to 17 in. wide, has expandable side panels that are adjusted to fit exact width of cabinet. Installed easily in minutes with just screw driver. Rolls in and out with fingertip pressure. $7.95 each; for more information: Dormetco, Inc., Dept. E, Los Angeles 64, Calif.

Free Decorating Booklet

THIS BROCHURE is in full color, has photos of interiors decorated with Vicrtex vinyl wall coverings. Included are reproductions of available patterns and a large sample swatch of the actual material. Write L. E. Carpenter and Co., Empire State Bldg., New York 1.

BUILD WITH CRAFTPLAN PATTERNS

HUNDREDS OF THINGS to do and make FOR FUN AND PROFIT

New! Plans for STRADIVARIUS VIOLIN
All the information and full-size patterns you need to make accurate copy of famous Strad violin. Order by Cat. No. 389 . . $2.00.

New! COLONIAL SPINNING WHEEL
Authentic design. Full-size. Use for actual spinning. No. 379 . . $2.00.

PLATING BABY SHOES. How-to-bulletin. No. 362 . . $1.00.

DOLL HOUSE PLANS
Complete details 6 different houses . . . Calif. style, Colonial, English, etc. Cat. No. 364 . . . $1.50.

DOLL HOUSE FURNITURE
For houses covered by above plans. No. 365 . . . $1.50.

22 KITES
How to build all kinds . . simple 2-stick, to giant 5 footer. No. 354 . . $1.50.

PENNA. DUTCH DESIGNS
93 full-size patterns; invaluable for hobbyists, decorators. No. 353 . . . $1.50.

HOW TO MAKE ALL KINDS OF CANDLES.
Practical how-to information. No. 352 . . $1.00.

47 DESIGNS CANDLESTICKS, CANDELABRA,
you can make. No. 328 . . $1.50.

15 ACTION WINDMILLS
Galloping horse, bull chasing farmer, etc. Full-size patterns. No. 313 . . $1.00.

SIX DESK PLANS
Desks for all purposes. Six fine designs. No. 371. $1.50

GIANT CIRCUS PINUPS
—up to 22 in. high. Pinups made of thin plywood, painted gay colors, delight youngsters. No. 314 . . $1.

15 OUTDOOR FIREPLACES
—Full details. No. 204 . . $1.

COPPER TOOLING
23 designs. No. 343 . . $1.00.

15th Century WOODEN WHEEL CLOCK
New! Wonderful conversation piece. Single hand indicates hours, fractions. Surprising in simplicity. Full-size patterns all parts. No. 372 . . $1.50

157 SILHOUETTE DESIGNS
Great variety of subjects. Professional quality art. No. 349 . . $1.50.

24 PIECES OUTDOOR FURNITURE
Chairs, tables, benches, folding, roll-about. Modern designs. No.348 . . $1.50.

30 LAWN NOVELTY CUTOUTS
Unusually cute designs. Full-size patterns. No. 347. $1.50.

MUSICAL NOVELTIES
Use Swiss movements. 19 designs. No. 239 . . $1.00.

NATIVITY SCENE
Dramatic presentation of Nativity Scene . . rich in beauty and color. Creche height 8 ft. Full-size patterns all figures. No. 370 . . $2.00

KIT FOR MAKING ANIMATED COMIC PHOTOS #350 . . $1.50.

MECHANICAL COIN BANKS
5 designs. No. 361 . . $1.50.

16 DESIGNS, GUN, FISHING GEAR RACKS, CABINETS
Store SAFELY Shotguns, Rifles, Handguns; also fishing rods, lures, etc. No. 344 . . $1.00.

16 WHATNOT SHELVES, WALL RACK
Latest fashions in wall decor. All patterns full-size. No. 342 . . $1.00.

UNUSUAL BIRD HOUSES
16 Designs. Want bird houses that are completely different; if so, don't overlook these plans. No. 341 . . $1.

New! GROWING ORCHIDS AT HOME FOR PLEASURE AND PROFIT.
Plants require less care than many ordinary house plants. Full details. Cat. No. 380 . . $1.

SCRIPT LETTERING — 8" high. Full-size patterns. A to Z—Caps, small letters, numerals. No. 335 . . $1.50.

BLOCK LETTERING — 12" high. Alphabet Caps, numerals. No. 334 . . $1.50.

BLOCK LETTERING
4, 8" high. Alphabet, numerals. No. 333 . . $1.50.

GIANT A TO Z LETTERING
24" high. Complete alphabet. No. 329 . . $1.50.

LETTERING PATTERNS. 5 Distinctive Alphabets—2, 3" high. Caps, small letters, numerals. 282. $1.50.

20 SERVING TRAY DESIGNS
Tray for every occasion. No. 332 . . $1.00.

69 WOOD LATHE PROJECTS—No. 331 . . $1.50.

30 SMART LAMPS
How to make lamps like you find in smart shops. No. 308 . . $1.50.

ETCHED ALUMINUM TRAYS
12 designs, complete how-to-make details. No. 367 . . $1.50

EDUCATIONAL TOYS — 14 different. No. 324 . . $1.00

ELI TERRY CLOCK
With Wood Gears. All details and patterns needed to duplicate famous original made in 1794. No. 325 . . $1.50.

New! How to Make and Use an ABACUS (Chinese calculator that uses beads). No. 378, $1.

$6.00 WORTH OF PLANS FOR $5
If price of plans you order is **$5.00** we'll include without extra charge another dollar's worth of plans of your selection. If price of plans selected is **$10** you get **$2.50** worth of Free plans. Your money back if you're not satisfied. *Please note*

18 DECORATOR STYLES, MODERN WALL CLOCKS
Designs compare favorably with clocks selling for up to $50. No. 326 . . $1.00.

ARTISTIC WIRE FIGURES
25 designs. No. 320 . . $1.00.

"UNCLE SAM" mailbox support,
66 in. high. No. 281 . . $1.00.

DUCK DECOYS—Mallard,
Pintail, Canvasback. No. 373 . . $1.00.

24 GADGETS FOR SMOKERS
Pipe racks, cigarette dispensers, smoking stands, etc. No. 323 . . $1.00.

MIDGET CARS
Powered by small gas engines. Two designs — racer, Jeep. No. 322 . . $1.00

New! CARVING ANIMAL CARICATURES
Tricks of making delightful little carvings. No. 375, $1.

HOME IMPROVEMENTS (Outdoor).
Plans on year-'round awnings, garage cupola, Dutch windmill, 57 trellises, fences, storm windows, etc. No. 309 $1.50.

HOME IMPROVEMENTS (Indoor).
How to make cornices, kitchen cabinets, bookcase units, modernize basement, attic, etc. No. 318 . . $1.50.

CHOIR BOYS ORGANIST
New! Motorized. Organist sways to and fro. 5 ft. 5 in. high. Very colorful. Full-size patterns. No. 369 . . $2.00

EARLY AMERICAN REPRODUCTIONS
New! Complete details 12 fine pieces — cobbler's bench, hutch tables; cranberry scoop magazine rack, ratchet lamp, etc. No. 363. $1.50

20 THINGS TO MAKE FOR CHILDREN
Novel, practical projects. No. 207 . . $1.00.

14 more ACTION WINDMILLS
Cop swinging arms, flying duck, Indian rowing, etc. No. 293 . . $1.00.

New! MIRROR SILVERING. Easy step-by-step procedure. No. 374, $1.00.

CAROL SINGERS OUTDOOR HOLIDAY DISPLAY
Singinest kids you ever saw. 47 in. high. Easy to make from plywood. Full-size patterns. No. 310, $1.

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"Secrets" practiced by Japanese for centuries. No. 368 . . $1.00

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All details needed to make 8 racks of attractive design. No. 307 . . $1.50.

RELIGIOUS MOTTOES
Full-size patterns, 8 inspiring mottoes, beautifully lettered Lord's Prayer. No. 306 . . $1.00.

129 JIGSAW PROJECTS
Great variety of things to make on jigsaw. No. 305 . . $1.00.

17 PIECES FINE LAWN FURNITURE
Designed for comfort, sturdiness. No. 304 . . $1.50.

COSTUME JEWELRY
Full-size patterns 482 lapel pins, brooches, name pins, alphabets, etc. No. 302 . . $1.00.

22 RACKS, CABINETS, KITS,
for Sewing Accessories. Useful, easy-to-make projects. No. 301. $1.

27 DISTINCTIVE SHELVES, SHADOW BOXES
Patterns, details on 19 attractive shelves, 8 shadow boxes. No. 300 . . $1.50.

MODERN WOOD FINISHING INSTRUCTIONS. No. 235 . . 50c.

18 Designs for WEATHERVANES. No. 269 . . $1.00

22 LAWN NOVELTIES
Have artistic touch not ordinarily found in such projects. Full-size patterns. No. 299 . . $1.50.

15 FAST-ACTION TOYS
All patterns full-size. No. 294. $1.

15 HANDSOME TABLES—Well-designed cocktail, coffee, end, lamp. Full details. No. 288 . . $1.00.

14 COLORFUL FLOWER BOXES
Full-size patterns 14 nifty boxes for potted plants. No. 278 . . $1.

16 BOOK END DESIGNS
Wonderful assortment. No. 274. $1.

GARAGE PLANS — Build Own 1, 2-car. No. 327 . . $1.50

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Small wren house to large colony house for martins. No. 253 . . $1.00.

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CLOWN PICTURES — Paint by number. 4 designs. No. 357 . . $1.50.

PLANTERS — 21 Designs, PLANT STANDS, HANGING GARDENS. No. 337 . . $1.00.

13 STURDY WORKBENCHES
Complete plans. No. 211 . . $1.00

13 Designs WOOD INLAY PICTURES . . No. 315 . . $1.00

HOW TO ORDER: Send list of plans selected. Remit by check, money order, postal note, U. S. bills. Order Today!

CRAFTPLANS

We pay shipping charges. All plans sent on MONEY-BACK GUARANTEE.

DEPT. F-50, 1322 S. WABASH, CHICAGO 5

END WINDOW REPAIRS ONCE AND FOR ALL..! with "KWIK OUTS"

NEW ATTACHMENTS DO AWAY WITH SASH CORDS AND WEIGHTS!

- No more broken cords.
- "Kwik-Outs" permit removing windows instantly for washing. No more dangerous outside washing.
- Easily installed by any handyman
- Windows raised or lowered smoothly —remain in any desired position. No more rattling.

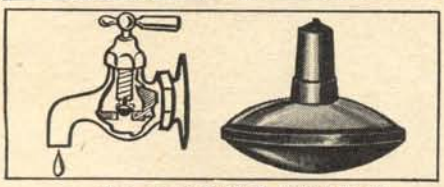
ORDER NOW! Complete Kit including 4 "Kwik-Outs," instructions—No C.O.D.'s please. Satisfaction guaranteed. only . . . . **$2.98** PPD.

BE SURE TO READ THIS LETTER

Dear Sirs:
Please send 12 more of your window units immediately. We put 5 in last Fall and we are so well pleased with the convenience that we're going to have all our windows changed. Enclosed is check. Thank you.
Mrs. R. W.

THOMAS PRODUCTS
P.O. BOX 151, DEPT. W-92
BLOOMINGTON, ILL.

LEAKY FAUCETS!



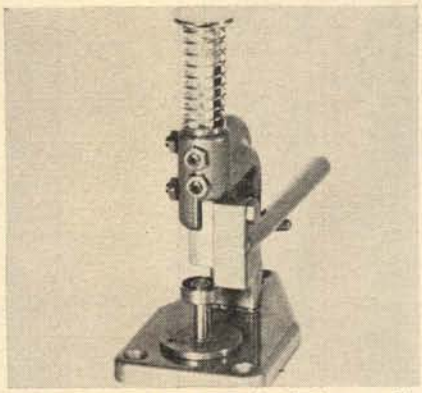
SAVE UP TO $100.00 ANNUALLY ON 5 SEALS ONLY $1.00. One leaky faucet may cost you up to $35.00 per year. You can now fix any faucet in 5 minutes — stops the leaks instantly.
The secret is the flattened ball construction of this EVER-WEAR Faucet Seal. The curved surface forms a seal against the faucet seat with 100% efficiency. Will not wear seat of faucet. Solid brass bearing and neoprene construction. Seal replaces old screw and washer. Comes with complete instructions—simple installation. Send your order NOW—ONLY $1.
EINOR Co. Box 43 Homecrest Station Dept. F-6, Brooklyn 29, New York

Make Your Own Holiday Candles

MAKE-DECORATE Candles FOR FUN OR PROFIT!

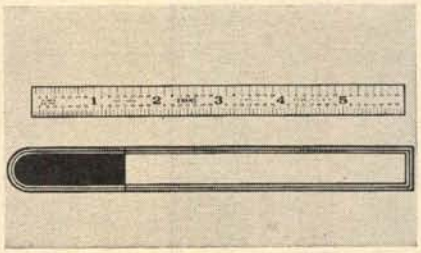
Men, women, ANY age! Learn to create, design & decorate unusual candles **for all occasions! FUN, fascinating hobby or spare time business.** Expand to **colorful candle shop,** later. **ENORMOUS DEMAND...** friends clubs, stores, churches, **everyone** will clamor for your original, unusual candle shapes, colors, types & scents. **As little as 10c in material brings $2 income!** All ages delight in this easy-to-learn craft. **No artistic ability required...** We show you how. Send **TODAY** for **FREE FACTS** on home instruction method. ***CANDLE INSTITUTE,*** *Dept. X-736,* Fallbrook, Calif.

Midget Arbor Press



CAST-ALUMINUM UNIT includes a ⅛-in. riveting head and seat, punch and punch button for metal and leather and blank arbor-press attachment for light general work. Unit base is 2¼ x 4¾ in., press is 6 in. high. "Tom Thumb" arbor press is $9.95. Zip Products Co., 428 New York Bldg., St. Paul, Minn.

Accurate 6-In. Scale

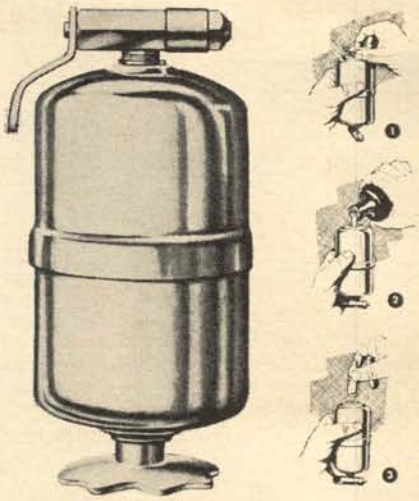


AVAILABLE IN TWO WIDTHS, new low-priced scale-rule has 6-in. stainless-steel blade, graduated down to 64ths. Price of ½-in.-wide scale is 40 cents, ¾-in. width is 60 cents, including plastic sheath. For information: Evans Rule Co., 400 Trumbull St., Elizabeth, N. J.

Vapor Brush Cleaner

JUST RINSE BRUSHES, store them in container. They are cleaned by vapor action. Vapor will soften paint-hardened brushes. Container and vapor solvent sold on money-back guarantee at $4.95 from Boone's, 3228 Fairview Court, Sacramento 21, Calif.

Rechargeable Spray Can



ATOMIZING SPRAYER for use with insecticides, germicides, garden chemicals, moth proofing and any noncoagulating liquid utilizes CO-2 cartridges that are readily available at drug and department stores for about 10 cents each. Beats the cost of expensive throw-away aerosol containers. With CO-2 cartridge, "Quick-Fill" sprayer is $9.95 ppd. from Grant Mfg., 906 Bay Oaks, Houston 8, Texas.

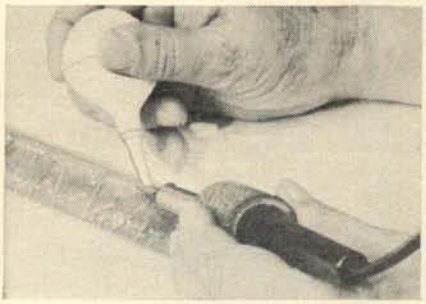
Free Project Booklet

INSTRUCTIONS FOR BUILDING patios, planters, steps, walks, block walls with ready-mix concrete and mortar are given in this booklet that is available free from building-material, lumber and hardware dealers, or direct from Sakrete, Inc., P.O. Box 1, Cincinnati 17, Ohio.

Shop Fire Extinguisher

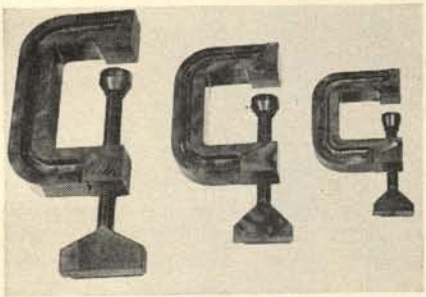
AN ABSOLUTE MUST in every home workshop is a fire extinguisher. This unit contains a dry chemical under pressure, has a gauge to show condition of contents. Unit is effective on gasoline, paint, chemical and electrical fires. Priced under $15. For name of nearest dealer handling Fyr-Fyter Mod. 23-3S, write: Fyr-Fyter Co., 221 Crane St., Dayton 1, Ohio.

Solder Remover



REMOVING EXCESS SOLDER from connections or printed-circuit boards is no problem when you have this miniature "vacuum cleaner". Melted solder is sucked into bulb, allowed to cool. "Little Joe", Model SR-25 is $1.10 from Macdonald & Co., 714 East California St., Glendale 6, Calif.

All-Plastic Clamps

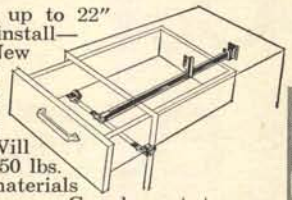


MOLDED GLASS-FILLED nylon, these clamps are colorful, lightweight, non-conductive, won't rust or corrode. Available in 3 sizes: ¾, 1-5/16 and 2 in. $2.98 for set of 3. For more information: ECI Clamp Div., 84-45 Abingdon Rd., Kew Gardens 15, New York City, N. Y.

CB Modulation Control

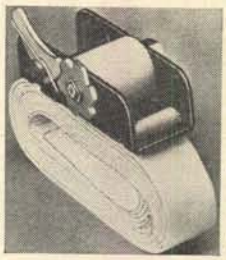
AMAZING IS THE IMPROVEMENT this device makes in the modulation qualities of any CB transceiver. Our tests showed our signal was clearer, could be read farther. Quickly and easily installed. With built-in modulation meter, SpeakEasy is $34.75; with 100% modulation-indicating light, $29.95, from your CB dealer or Communications, Inc., 33 Danbury Rd., Wilton, Conn.

DRAWERS SLIDE EASIER-QUIETER with SINGLE-TRACK DRAWER SLIDE



For drawers up to 22" deep. Easy to install—In Old and New Drawers, ⅛" narrower than opening with 1" between each drawer. Will support up to 50 lbs. High quality materials—low cost to you. Can be cut to any length. Only 98c per set. BARGAIN One Dozen sets only $9.89. Wt. 1 lb. per set. Satisfaction guaranteed. Prices F.O.B. Chicago. Send 10c for catalog of lamp parts, veneers, lazy Susan bearings, rocker springs, Swiss musical movements, etc. A 50% deposit is required on all C.O.D. orders.

VENEERS We have: Veneers 1/28" Thick. To introduce you to our specialized line, we will send Two Square Feet each of Cherry, Mahogany, Walnut, Oak and Maple for only $1.50 ppd. Many other species available, all listed in our Woodworking Supplies Catalog, yours for only 10c.



WEB CLAMPS

Indispensible for cabinet work, repairing furniture, etc. Ideal for holding work of any shape and almost any size. Equipped with 12 ft. of heavy 600 lb. break strength nylon webbing. Design prevents marring of work surfaces; eliminates padding. Ratchet action; pressure is obtained by tightening with 9/16" wrench; easy, quick release. Web Clamp — $4.95 ppd.

BARAP SPECIALTIES

DEPT. W-9, P.O. BOX 2044
CHICAGO 9, ILLINOIS

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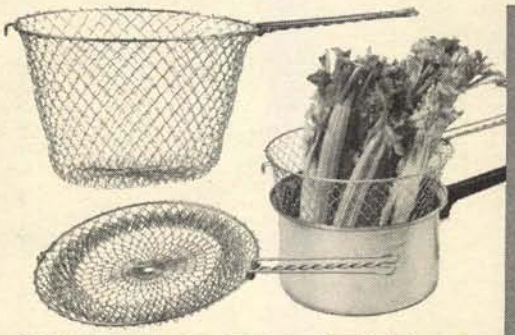

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Three-Cornered Coffee Table

HI SIBLEY

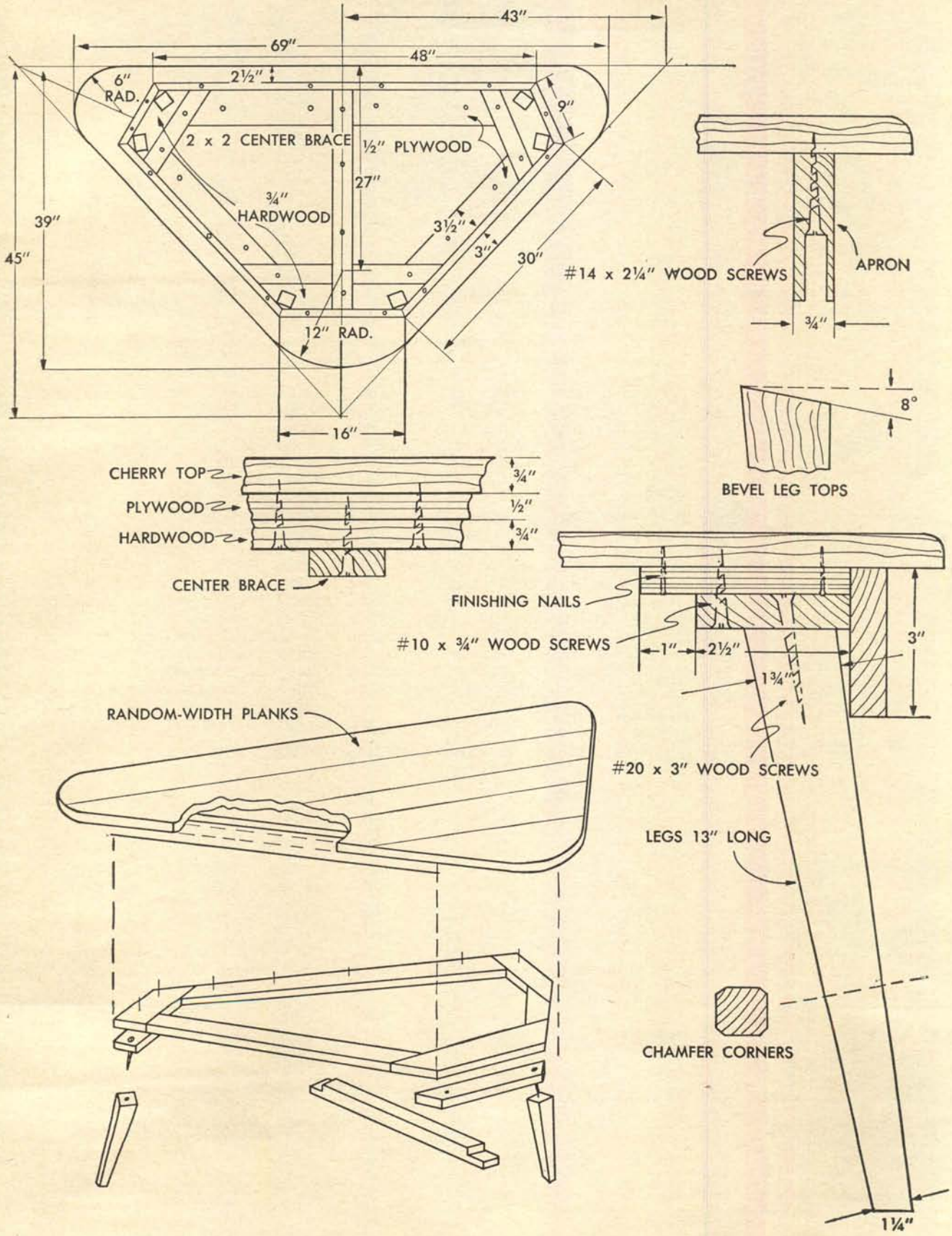
Unique in design, with three corners and six legs, this table glows with the beauty of solid cherry wood.

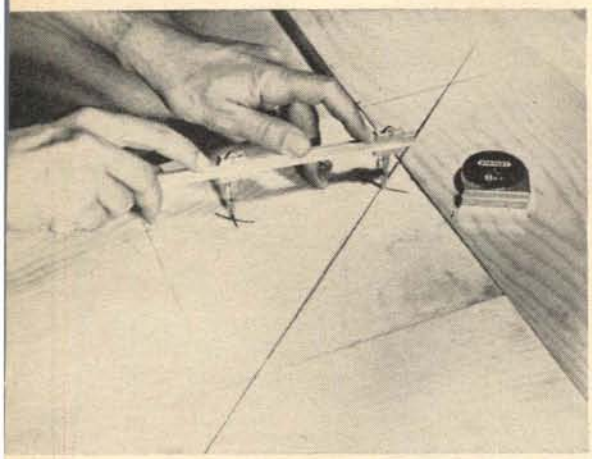
RANDOM-WIDTH PLANKS of 1-in. cherry solid stock are edge-glued to form the top of the unusual three-cornered coffee table shown on our cover. There are two legs at each of the three corners of the table, the original of which was built especially for Charles Howard, Sr. of Hemet, California.

Start construction by edge-gluing the trued lengths of stock to form a rectangle on which the triangular-shape can be drawn. (The planks are positioned parallel to the longer side of the table.) Locate the center of what will be the long side of the table, then measure 43 in. from the center in both directions and make a mark. It may be necessary to temporarily position a scrap piece of stock at the ends of the glued-up top to permit marking the 43-in. distance. Now, from the center of the edge, draw a line at right angles, and at least 45 in. long. From this 45-in. mark draw a line to each of the points on the long edge of the top that are 43 in. from the center of the edge. The result will be a triangle with two legs of equal length, the third leg being longer.

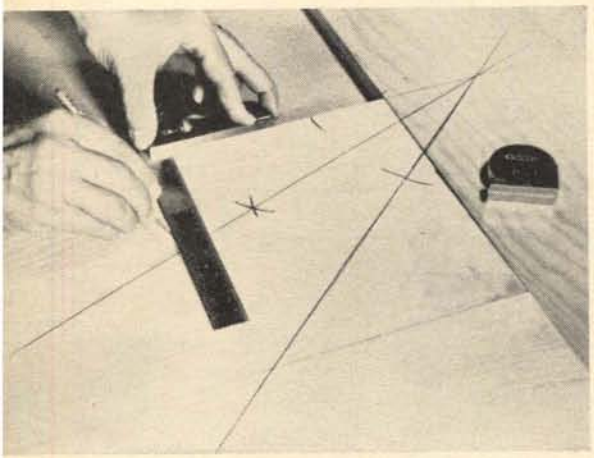
Measure up 27 in. from the long edge and make a mark. From this point draw an arc with a compass or trammel points, having a radius of 12 in. The positions of the centers for drawing the 6-in. radius at each of the other corners can be found in two different ways. (Some of you craftsmen, no doubt, will figure others.) If the triangle is not cut to shape, bisect each of the angles with a compass or trammel points, as in Figs. 1 through 3, and in Fig. 5. We are showing and describing how to bisect an angle with a compass just in case some of you may have forgotten your high-school geometry. You will note in Figs. 1 through 3 that it was necessary to temporarily fit a scrap of stock at the end of the glued-up top to permit drawing the complete triangle. Using the point of the triangle as a center, two arcs with equal radii are drawn to intersect the sides of the triangle. From the latter two points two more equal-length arcs are drawn so they intersect inside the triangle. To bisect the angle, draw a line from the intersection of the last two arcs to the point of the triangle. Now, adjust your square to a 6-in. length and move it along the edge of the table top until it just touches the bisecting line. Make a mark at this point and use it as the center for drawing an arc with a 6-in. radius. The operation is repeated at the opposite corner.

An alternate method of finding the centers for drawing the 6-in. arcs, if the table top is cut to triangular shape, is simply to set your square at 6 in. and move it along

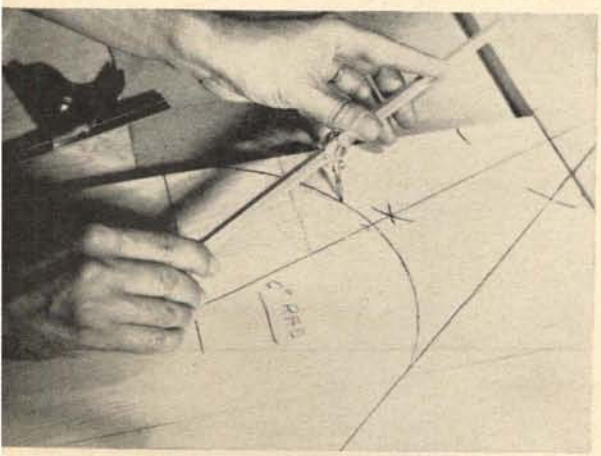

43"
69"
48"
2½"
6" RAD.
9"
2 x 2 CENTER BRACE
½" PLYWOOD
27"
¾" HARDWOOD
39"
45"
3½"
3"
30"
12" RAD.
16"
#14 x 2¼" WOOD SCREWS
APRON
¾"
8°
BEVEL LEG TOPS
CHERRY TOP
PLYWOOD
HARDWOOD
¾"
½"
¾"
CENTER BRACE
FINISHING NAILS
#10 x ¾" WOOD SCREWS
1"
2½"
3"
1¾"
#20 x 3" WOOD SCREWS
RANDOM-WIDTH PLANKS
LEGS 13" LONG
CHAMFER CORNERS
1¼"



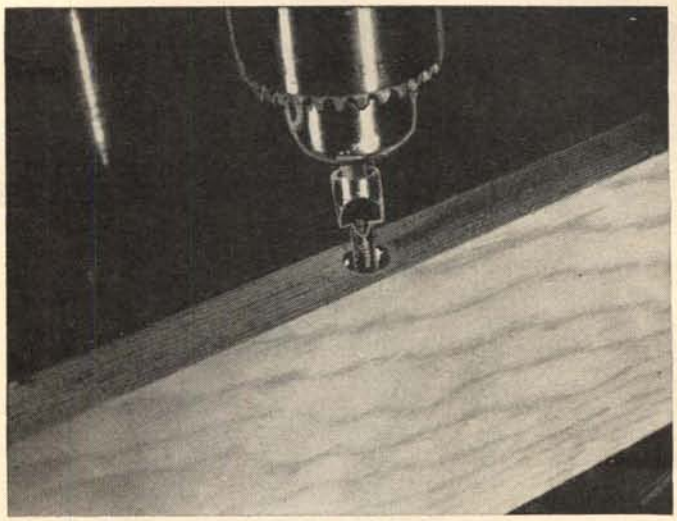
1. After top boards are assembled, use scrap to extend triangle, bisect angle.



2. Slide square along edge until 6-in. mark intersects line that bisects angle.



3. At intersection of 6-in. line and line bisecting angle, set compass, make arc.



4. Apron is attached to underside of table top by screws driven up through apron in counterbored holes.

the adjacent edges of the table, drawing a line as you move the square. The intersection of the two lines will be the center for the 6-in. arc. Both methods are in Fig. 5.

To determine the various angles between the pieces of the apron, draw lines ¾ in. apart as indicated to show the positions of the apron members. At the various intersections, draw lines to make the angles. Pick up the angles with the aid of a sliding T-bevel as shown in Fig. 5, then transfer them to your saw and cut the angles on the apron pieces. Attach the apron to the table top with screws driven up through holes that are counterbored in the apron, Fig. 4.

The pairs of beveled legs are cut at top and bottom to provide the correct angle of splay, then are attached to hardwood pieces with screws. The hardwood members then are attached to the strips of ½-in. plywood that are attached to the underside of the top with glue, wood screws and finishing nails. The fasteners are short enough so that none penetrate the top. Finally, attach the center brace.

Round the edges of the top, then sand the top with progressively finer grits until a smooth finish is obtained. Dust thoroughly, then apply a paste filler, thinned as per the manufacturer's instructions. When it has set, sand again, then apply your favorite finish; clear shellac, lacquer or paste wax. △ △

BISECTING ANGLE AND MARKING FOR 6" ARC

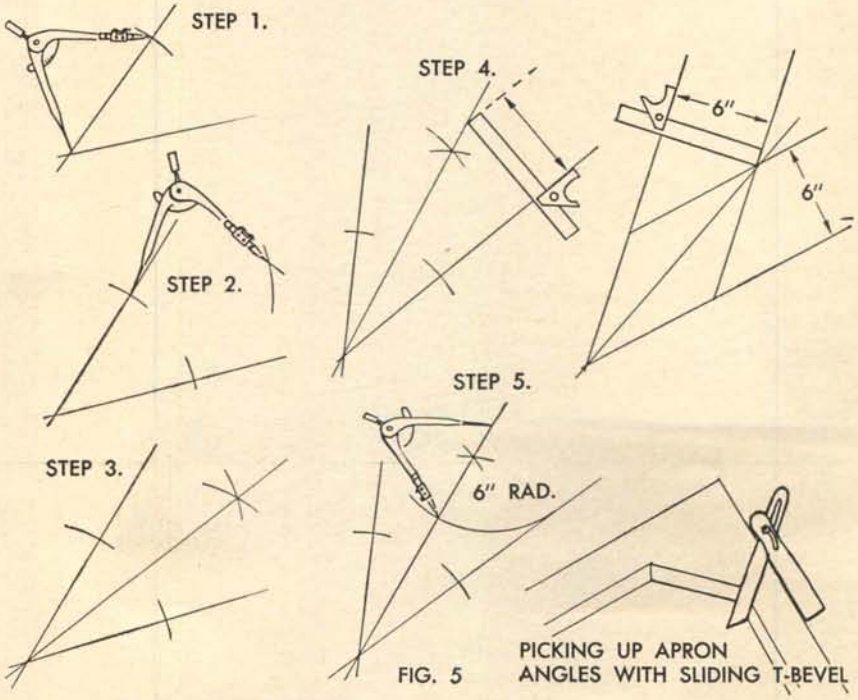


FIG. 5

1. Cabinet modified for trash container slides out easily to permit access from above without awkward squatting.

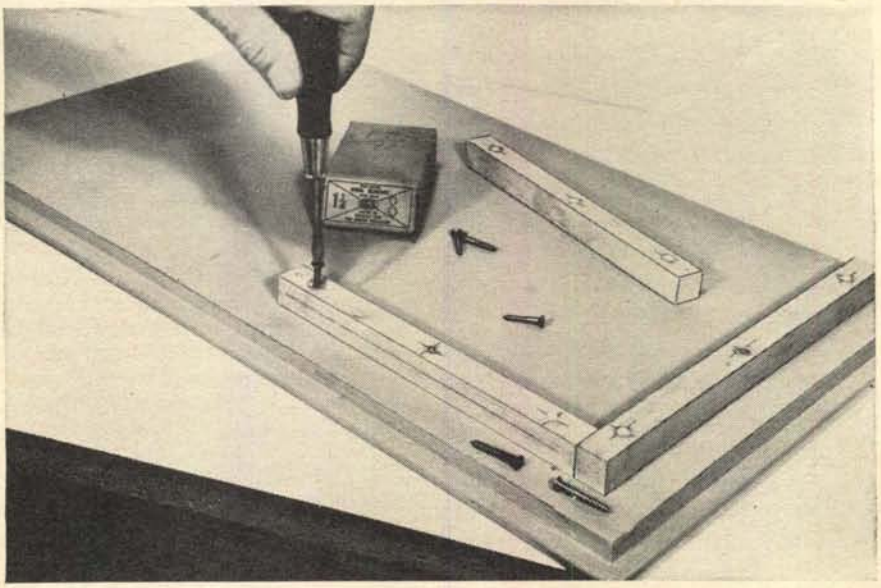
No Waste Space

(In Your Kitchen Cabinets)

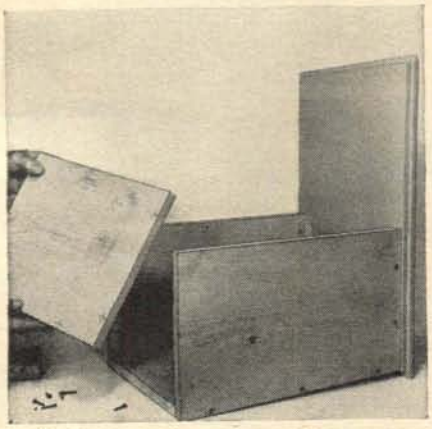
OPEN SHELVES ARE FINE in cabinets above counter height, where they can be reached easily. However, space under the counter requires considerable stooping, reaching and fumbling to find items you want, and to replace those items in some sort of order. This is true especially in cabinets that are fairly narrow. A more practical method of using under-counter space is to have the cabinets pull out to permit access from above. The cabinet sections can roll out on bottom casters or slide out like a drawer on metal drawer guides. An example of this is a trash bin that was made by modifying a cabinet, Fig. 1.

To make the modification the door was removed and the hinges discarded. Holes left by the hinge screws were puttied and sanded. Cleats then were screwed to the inside surface of the door, Fig. 2, to accept the sides of the bin cut from 1-in. stock or ¾-in. plywood, Fig. 3. The bin was made shorter than the depth of the cabinet, and narrower than the cabinet to accommodate the width of the drawer slides. The latter dimension is determined by the type slide used. The door pull was moved to the top of the door, Fig. 4, and the slides were fitted inside the cabinet and on the sides of the bin. In most base cabinets the inside of the cabinet is wider than the door opening because of the face trim. This means that spacer blocks will have to be attached to the cabinet sides to position the drawer slides.

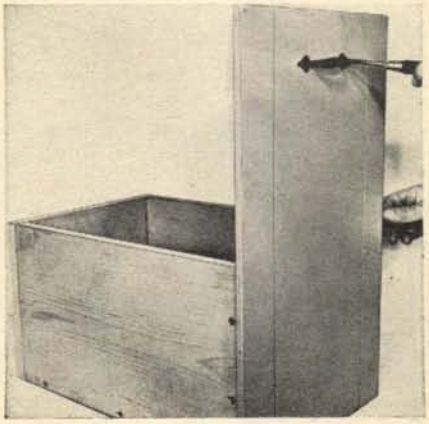
Another method of using a base cabinet for a trash receptacle is to install a unit, Fig. 5; a pullout bracket holds a plastic trash can. △△



2. Cleats are glued and screwed to inside of door that becomes front of slide-out bin when cabinet is modified to become trash container. Allow space for slides.

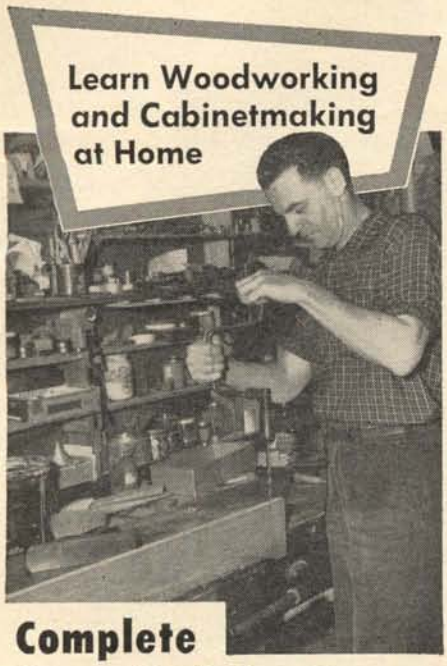


3. Bin is made from 1-in. solid stock or ¾-in. plywood. It is shorter than depth of cabinet, narrower to accept slides.



4. Handle on door is moved up to top of drawer to make it easier to pull out the bin; screw holes are puttied.

5. Easily installed metal bracket lets trash receptacle slide in and out of cabinet under sink. Knape and Vogt No. 796.



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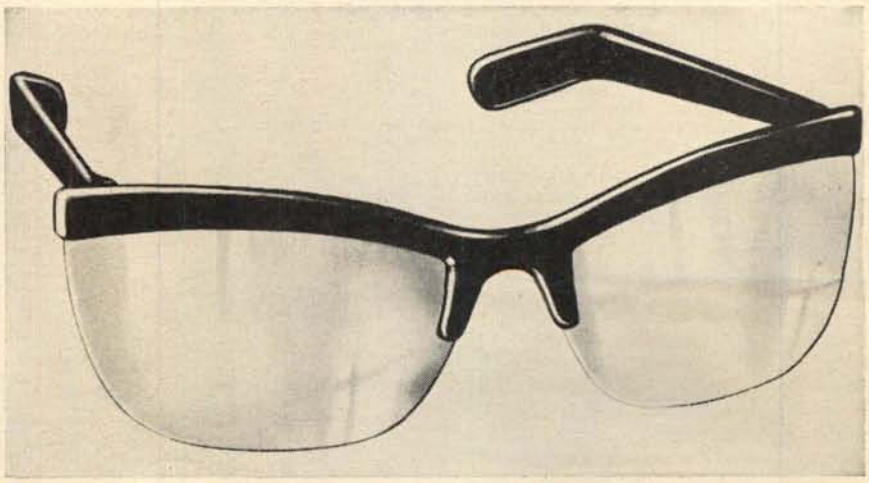
EYE SAFETY IN THE HOME SHOP

RICHARD LUND, O.D.

For protection when using grinding wheel, face shield is especially effective, prevents particles from hitting your face, as well as your eyes.

PROTECTIVE GUARDS are standard equipment on all power tools, and most home-workshop owners are careful to see that the guards are in place and properly adjusted. This safety equipment keeps fingers and hands clear of whirling saw blades and spinning bits, but does very little in the way of protecting eyes. Watching the blade of your table saw cut a straight line requires that you be in the line of flying chips and sawdust; watching a drill bore through metal often means your eyes are in the path of the chips flung away from the spinning drill bit.

Eye protection is recognized by industry as a necessity. Every progressive company provides eye protection for its employees. As manager of your home workshop



For general work in the shop protect your eyes with lightweight safety glasses such as these that can be worn right over prescription glasses.

Photo Courtesy of General Scientific Equipment Co.

you should provide this same protection for your employee, yourself. A pair of safety glasses should be one of the first "tools" purchased for any home workshop. Eye injuries occur easily. Serious damage to your eyes can result when doing a seemingly hazard-free job, such as scraping paint. Using a cold chisel without eye protection is simply asking for trouble. Using a star drill in masonry presents the same hazards to your eyes.

The most sensitive portion of your eye is right out in front to catch the damaging "bullets" of wood or metal particles hurled from a power tool. This is the cornea, the clear window of the eye that is in front of the colored iris. The corneal tissue is soft, and easily penetrated by flying particles. If wood or metal sticks in the cornea, it must be removed and the cornea treated. When penetration of the cornea is deep, a scar may result that will leave blurred vision or complete blindness. A simple scratch of the cornea surface may become ulcerous, and eventually cause blindness. The second greatest number of injuries leading to complete or partial blindness are caused by chemicals. Paints, thinners, acids and alkali lead the parade of eye killers. One tiny drop is enough to do the damage. A blow to the eye by larger objects may cause blindness by affecting the retina, the "film" at the back of the eye that contains visual nerves and fibers. This can happen even with the eyelid closed tightly.

When an eye injury occurs, be cautious with first aid. Allow only a doctor to remove particles from the eye surface. If chemicals get in your eyes, wash them immediately with generous quantities of water. In any case, call your family physician immediately.

Better than considering first aid or calling your doctor, prevent injuries in the first place. Your eye doctor can prescribe an inexpensive pair of safety glasses. If you do not wear prescription lenses, glasses without power can be purchased. If you weld or use spattering materials, glasses are available with side shields. For using wire brushes, grinding wheels and the like, use a face shield that protects the tender skin of your face from flying bits of debris.

Reach for safety glasses or face shield before you reach for the switch of a power tool. Keep your future bright and clear by being able to see it. △ △

Photo Courtesy of Titmus Optical Co.

Wear safety glasses, keep guards on power tools, and keep them adjusted properly.

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Building Kitchen Cabinets

PART VII

Utility or Drawer Cabinet

RALPH TREVES

IN ALMOST EVERY KITCHEN there is need for a utility or drawer cabinet, Fig. 1, that will provide storage space for food and cakes, a drawer for silverware and work area for using such appliances as food grinders. The cabinet can be fitted in a row of other cabinets under a single counter top, or may be used as a free-standing unit. In the latter case the top of the cabinet should be 2-in. maple so it can be used as a cutting board.

In the cabinet described in this article the top drawer is compartmented to hold silverware and cutlery, the second drawer is for miscellaneous items and the third drawer is for storage of bread and cake. The latter drawer is lined with plastic laminate to permit easy cleaning, and divided by a partition to keep bread and cakes separate. An optional feature for this drawer is a panel of ¼-in. hardboard that fits in grooves cut near the upper edges of the sides. It helps keep the contents fresh. The lower drawer is for vegetables, and has a perforated-metal bottom for ventilation. Vegetables are kept in a separate metal pan that fits in the drawer. At the top of the cabinet is a metal plate that slides out to provide a bracket for supporting appliances such as a food grinder, Fig. 10. The cabinet can be 18 or 24 in. wide, Fig. 2, but if it will be installed in a line of cabinets it should be designed to exactly fit the space available. Height of the unit is a standard 34½ in. which will permit it to fit under the regular counter.

1. Drawer cabinet may be installed in line of cabinets, or may be used as a free-standing unit with cutting-board top.

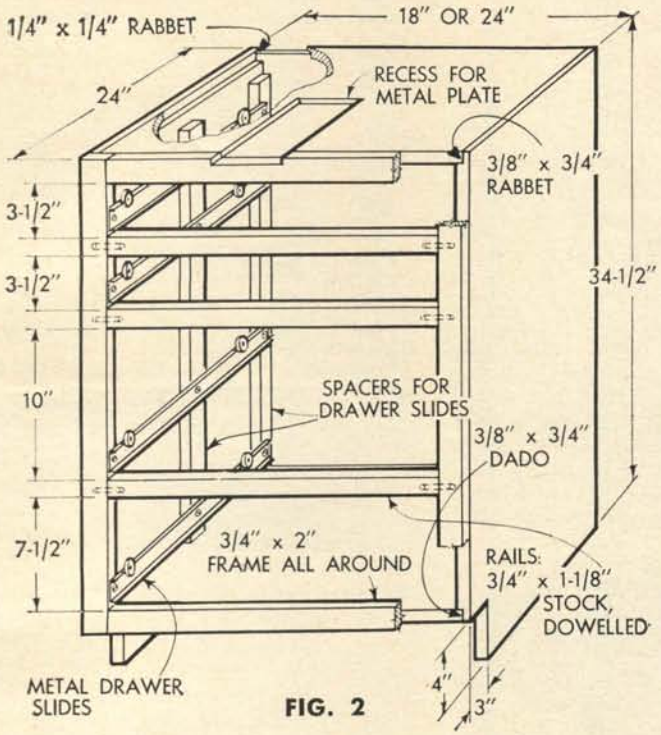
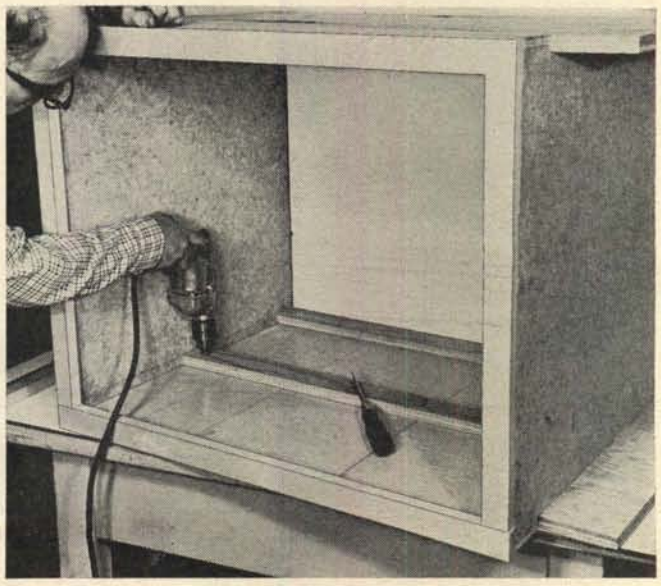


FIG. 2

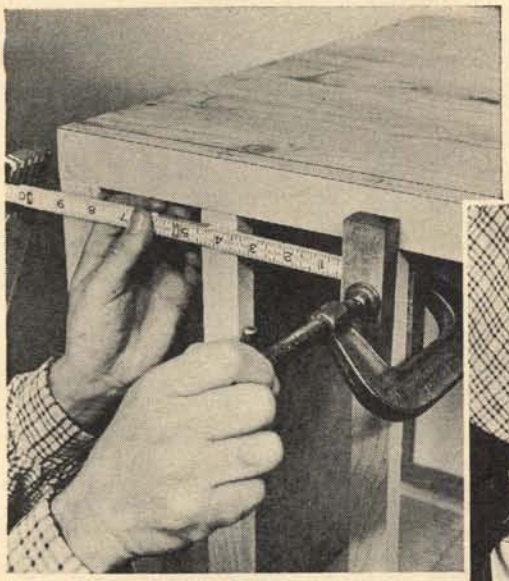
3. Cabinet is completely framed, ready for drawers. Sides are ¾-in. plywood, front facing is solid ¾-in. birch strips.

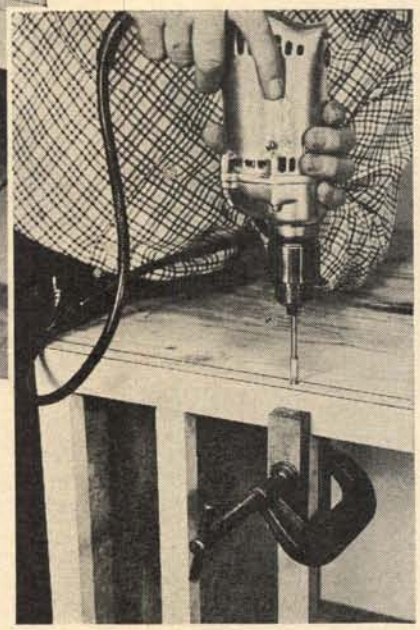
Assembly details are shown in Fig. 2. In Fig. 3 is shown the cabinet frame complete. Note that the toe space is not covered. As has been stated in previous articles, the dimensions of the toe space can be changed to suit personal preference, or to match the space of existing cabinets. All drawers are fitted with metal guides to permit easy removal and smooth action, Fig. 4. Those used in the cabinet shown are Amerock side-mount No. 4022. Other types are available; buy the guides before making the drawers, as the required space between cabinet and drawer sides will vary with the make and model of

4. Drawers are readily removed by pulling out as far as they go, then lifting up. To replace, reverse this procedure.



5. When cabinet sides are assembled with top and bottom shelves, spacer strips are installed to position drawer guides.





6. Cross strips are clamped between blocks to position, then drilled for dowels that are glued in holes to hold strips.

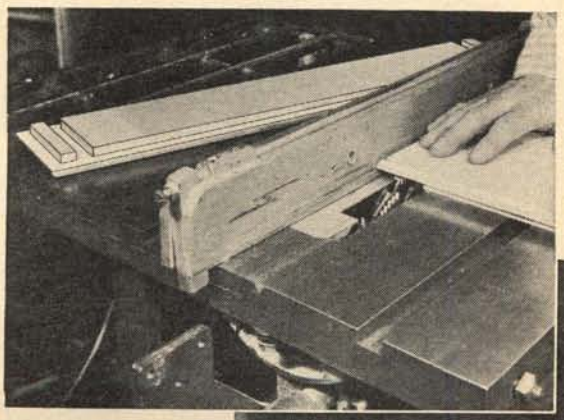
7. Back panel is drilled and countersunk for screws, panel is glued and screwed into rabbets cut on backs of cabinet sides.

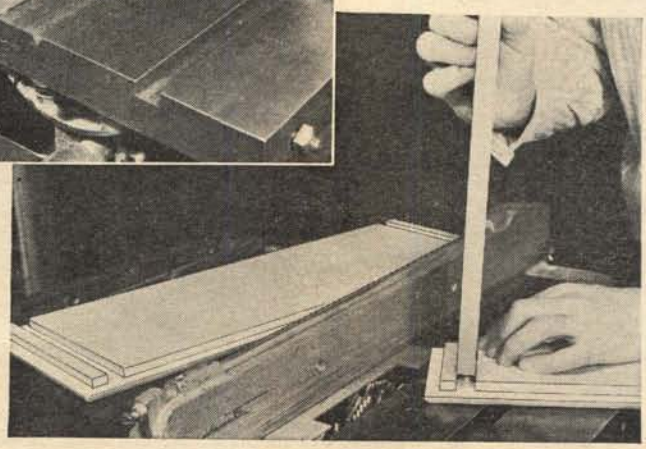
the guides. To position the guides flush with the inside edges of the facing on the cabinet, spacer strips are installed, Fig. 5.

After assembling the cabinet sides, top and the bottom shelf, temporarily fit the back in place and make up the facing framework. This is ¾-in. solid stock, such as can be obtained from a number of our advertisers who sell cabinet lumber and supplies. Rip the strips to the widths indicated in Fig. 2, then cut to lengths to suit your particular cabinet. Clamp the strips as shown in Fig. 6, and drill for dowels that are glued in place. The back that was temporarily installed now is removed, the drawer guides are fitted in place and the back is replaced permanently. Holes are drilled for countersinking flathead wood screws, Fig. 7.

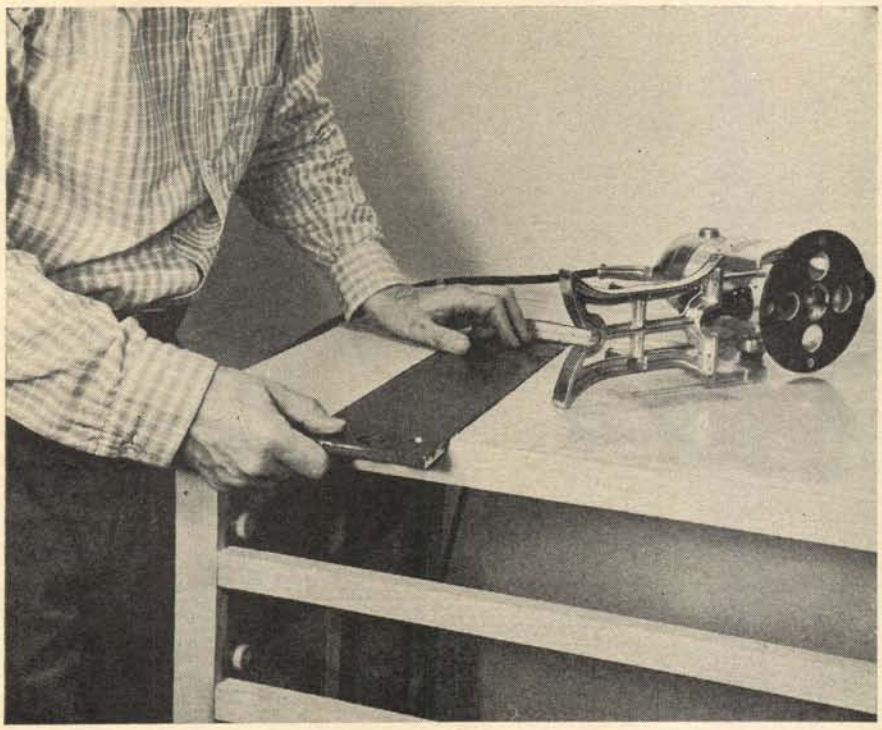
Drawer construction has been described in a previous article; when making the drawers the sides must be positioned to allow clearance for the particular guides used. This will determine where the dadoes are cut for the drawer sides, Fig. 8. The plate to which the appliances are clamped should be of steel or aluminum 3/16 to ¼ in. thick and at least 12 in. long. A recess is routed for it in the cabinet top, Fig. 9, so it is slightly below the top surface. This provides clearance when the counter top or chopping block is installed. A finger hole is bored in the metal plate so it can be grasped to be pulled out. A hardwood block of handy size is fitted with a dowel, Fig. 10, so it will fit the finger hole. The dowel keeps the block in place and also prevents the metal plate from sliding in under the counter top when an appliance is being used.

If the cabinet is to be in a line of others, the sides can be regular fir plywood, if the unit is to stand alone, use birch-faced plywood, or some other hardwood-faced plywood. The choice of drawer pulls is determined by the pulls used on other cabinets in the kitchen. △ △

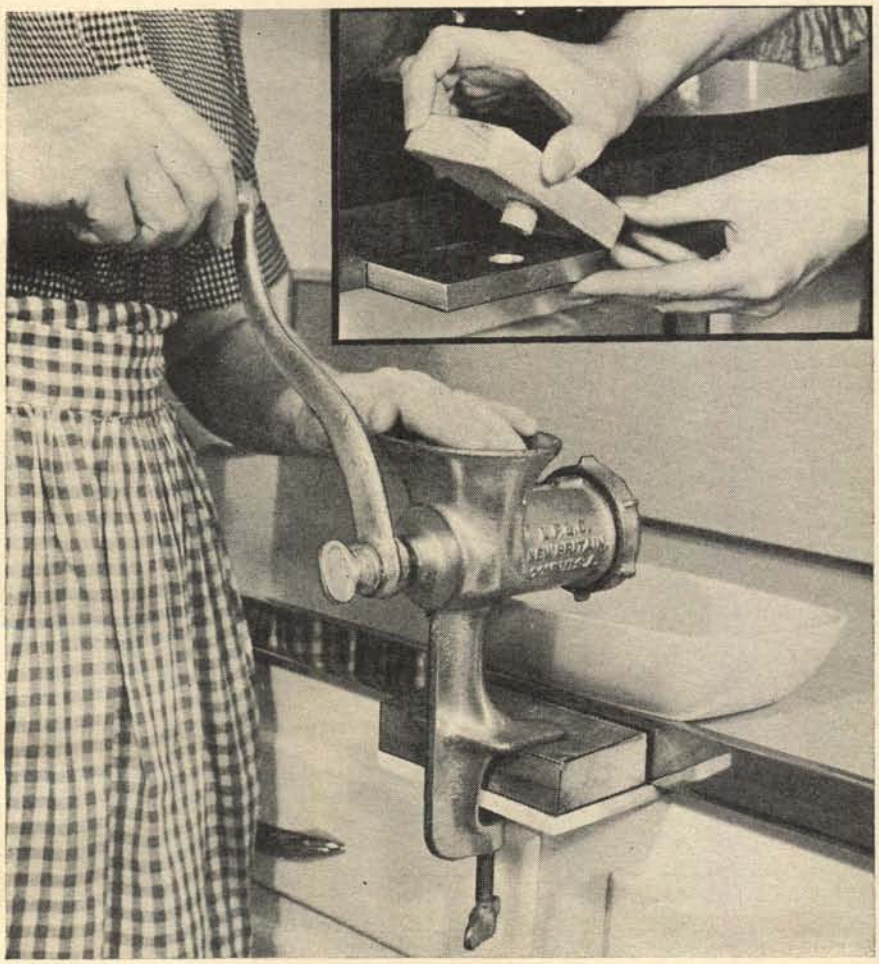




8. Drawer fronts are grooved to receive sides, sides are positioned to allow ½-in. for drawer guides; this may vary.



9. Metal plate will slide out only a few inches to hold food grinder or other appliance. Plate is drilled for finger hole and for dowels in wood block.



10. Dowel in wood block fits in hole in metal plate to position it, also to keep metal plate from sliding inward when appliance is being used.

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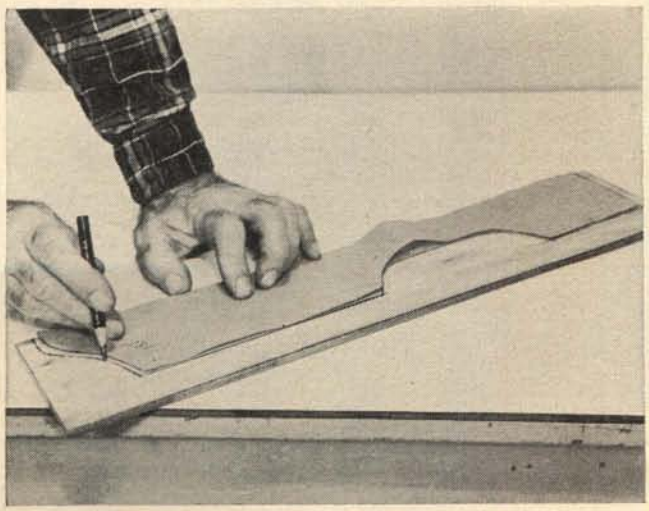
DISTINCTLY EARLY-AMERICAN IN DESIGN, this wall cabinet features a touch of elegance in the latticework made of gleaming brass rod. To maintain the look of lightness, ¼-in. stock is used throughout, except for drawer fronts and the strips used in the lattice assembly. Make patterns for the two sides and the back on heavy wrapping paper, then cut out these pieces, then cut the necessary dadoes in the sides to receive the shelves. Note that the shelves are ¼ in. longer than the back is wide, to allow for the ⅛ in. on each end of the shelves that fits in the dadoes. The two lower shelves are 3¼ in. wide, the extra ¼ in. being necessary because there is no back.

Brass rods for the lattice should be about ⅛ in. Cut them to a length of about 8½ in., then bend as indicated so the angle portion is about 7⅝ in., the short ends that fit in the wooden strips are about ⅜ in. After bending, the rods can be cut to fit as necessary.

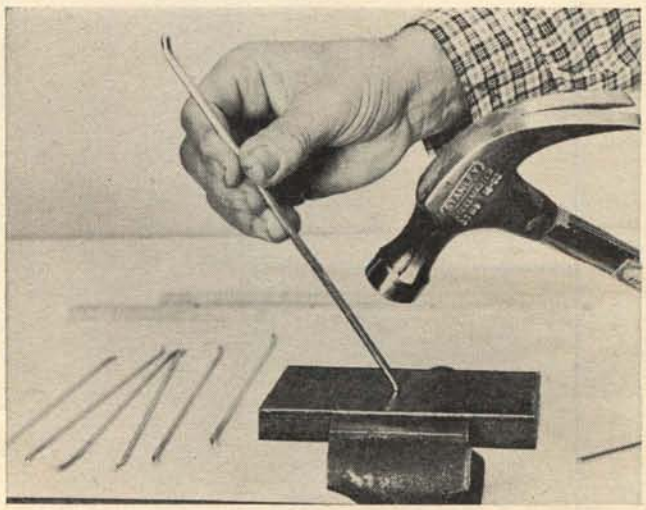
Drill two ⅛-in. holes at each location of the rod ends, centering them ⅛ in. from each edge. This allows only 1/16 in. material between the holes, and between the holes and the edges of the stock, so use care in the drilling operation. Assemble the rods and strips,

Gleaming brass rods form lattice in this unusual wall cabinet that can be used for a variety of purposes.

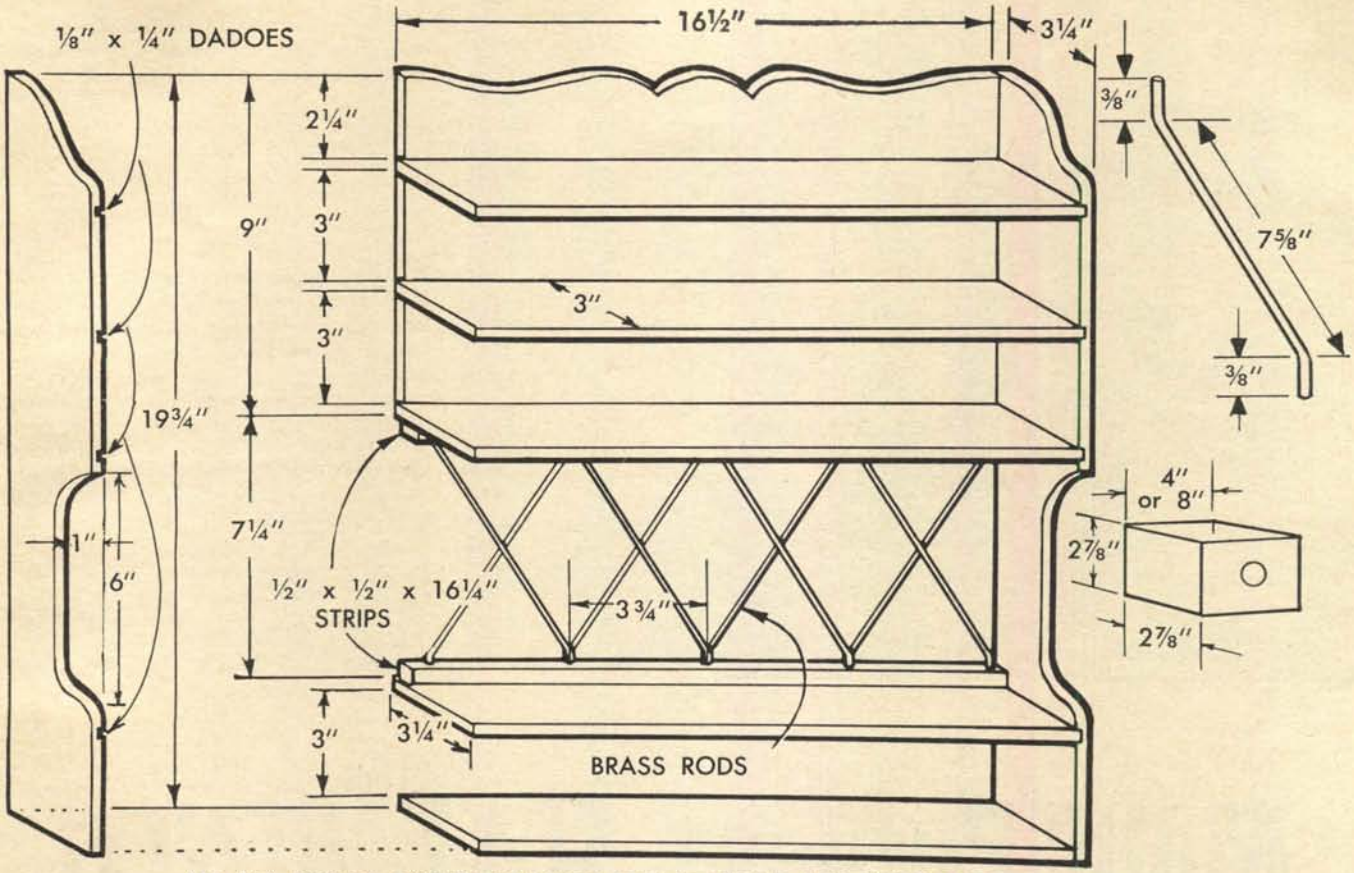
Latticed Wall Rack



Pattern for each side is traced on ¼-in. stock, then is cut with band or jig saw. Heavier stock will make cabinet cumbersome.



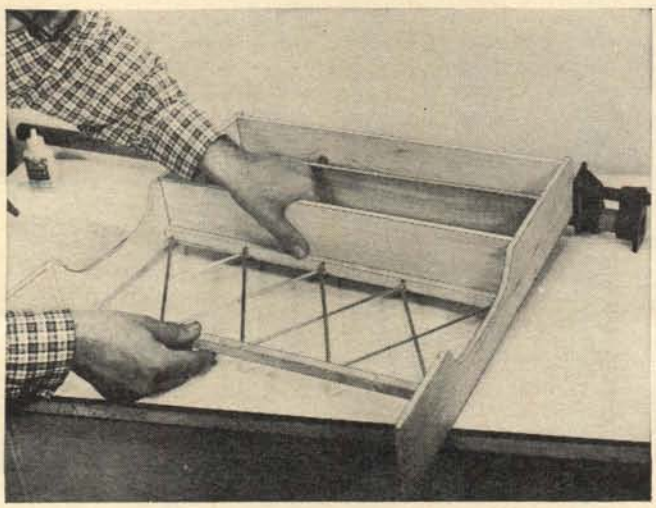
Ends of brass rods are bent in vise, or in metal block in which hole is drilled. Bend all rods uniformly after cutting.



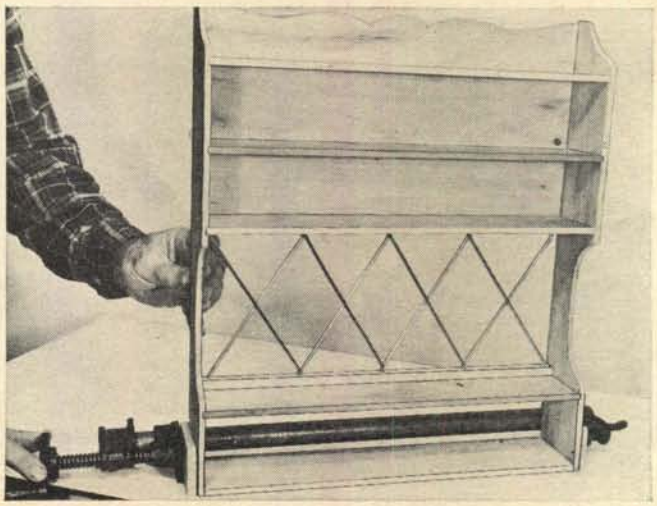
ALL ¼" STOCK, EXCEPT DRAWER FRONTS THAT ARE ½" STOCK

then hold the assembly together with masking tape, if necessary, to permit inserting it. Glue and brad the three top shelves in their dadoes, then fit the lattice-work assembly in place. Use glue on the ends of the strips, drive brads into the ends through the cabinet sides. The two bottom shelves now are slipped into their dadoes, being held with glue and brads.

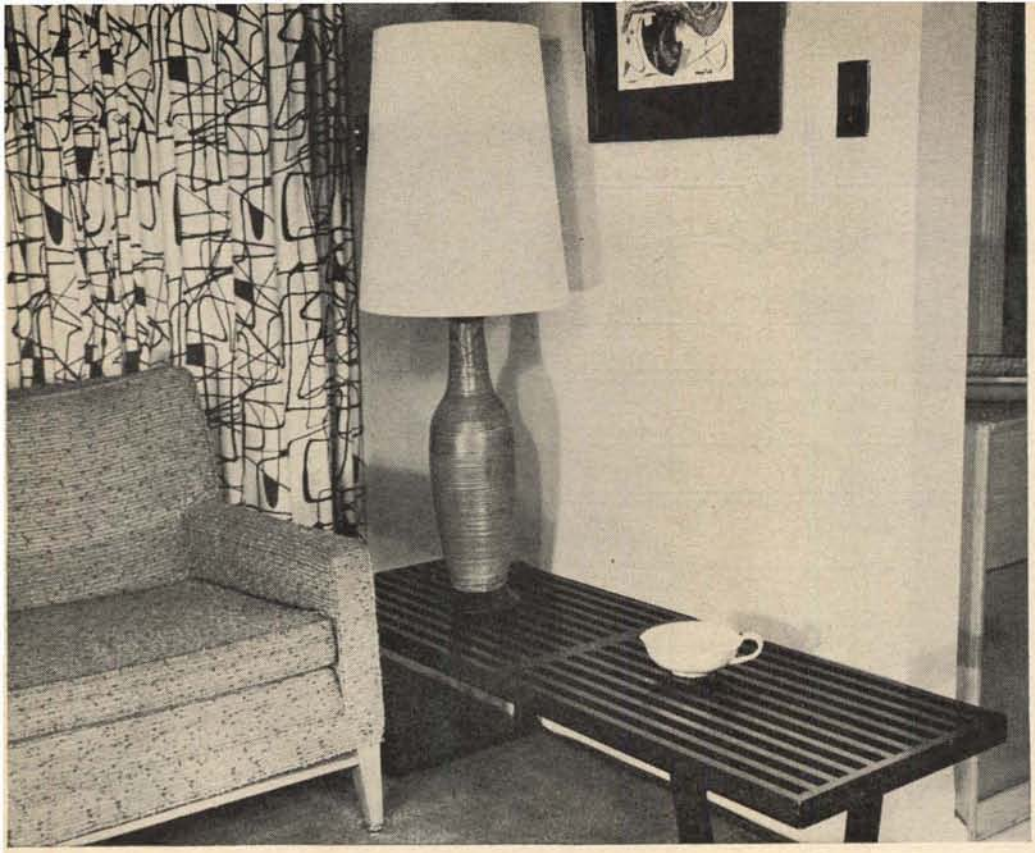
The cabinet can be used as a plain shelf unit, or drawers can be made to fit, as shown. Two sizes of drawers are required, as indicated. Finish the cabinet with an antique stain to maintain the Early-American look. The brass rods will be dull when purchased. Clean them with steel wool until they gleam, then apply a coat of clear lacquer. △△



Fit rods into ½-in. strips, fit assembly in cabinet. If necessary hold the assembly together with masking tape while installing it.

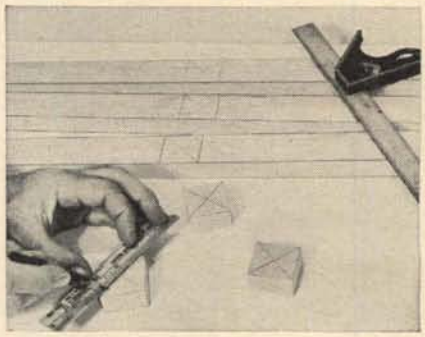


Strips of lattice-work assembly are clamped between sides, secured with glue and brads driven into them through the sides.



1. Finished in flat black for contrast to other furniture, slat bench can be table, as here, or base for other furniture.

2. After ripping slats 1½ in. wide from 1-in. stock, cut spacer blocks 1½ in. long, mark them, and slats, for drilling.

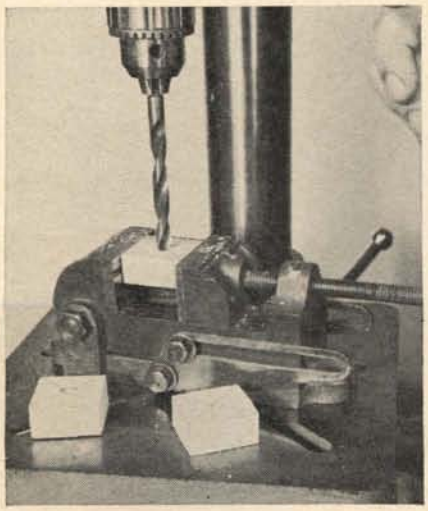


Multi-Purpose *SLAT BENCH*

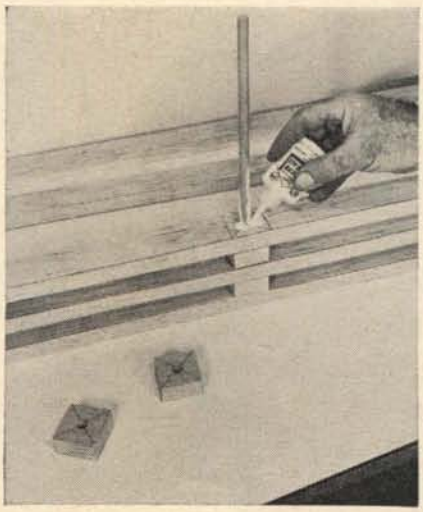
ATTRACTIVE ENOUGH to fit any decorator grouping, this slat-style bench, Fig. 1, has the added advantage of being usable in a number of different ways. It is ideal as a lamp table, fine for a coffee or occasional table. With the aid of a few cushions it becomes a bench to handle the seating of an overflow crowd at a party. Because the bench is just 12 in. high it can be used as a base for wall cabinets, buffets, dressers and the like, Fig. 8.

To start construction, rip a 5-ft. length of 1-in. clear pine or hardwood into strips 1½ in. wide. Cut the strips to a length of 54 in. Mark and cut the scrap pieces to lengths of 1½ in. The latter are spacer blocks. Mark and drill the blocks on center, Figs. 2 and 3, and mark the locations of the blocks on the slats and drill them also, Fig. 2. The holes for the dowels that run through the spacers and slats are located at the centers of the slats and ¾ in. from the ends of the slats, Fig. 6.

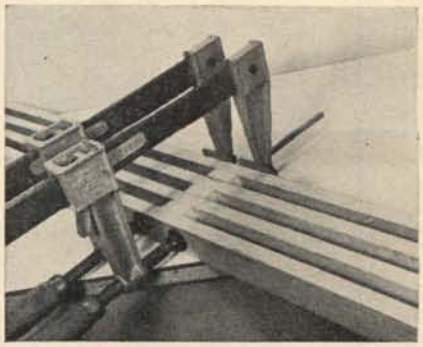
Glue is wiped on the faces of the spacer blocks and on the slats and 18-in. lengths of dowel are driven through the assembly, Fig. 4. Not



3. Drill press speeds job of boring ⅜-in. holes to receive dowels that hold bench together, but portable drill can be used.



4. Glue is wiped on dowels and on faces of slats and spacers during assembly. A few slats can be glued up at one time.



5. Use clamps to assure full contact between glued faces of slats and spacer blocks. Wipe off excess glue.

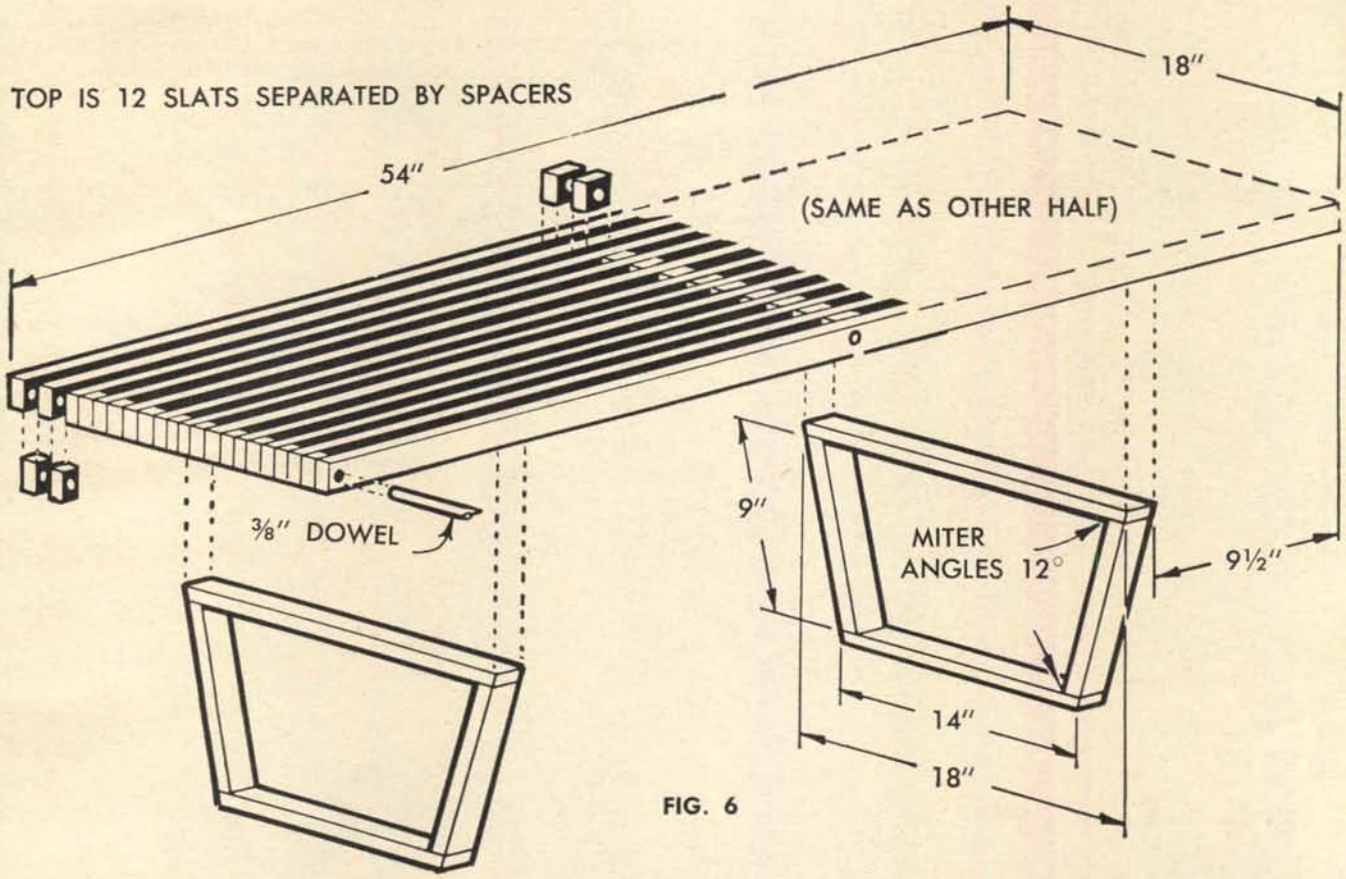
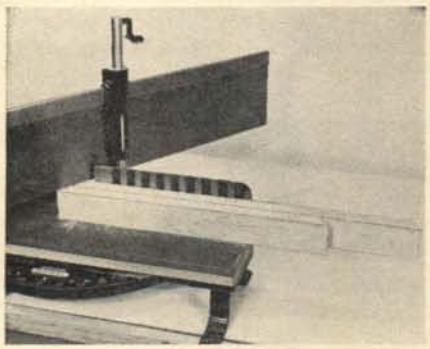


FIG. 6

all the slats and spacers need to be assembled at the same time. Clamp the glued assembly, Fig. 5, and allow the glue to set overnight. Legs for the bench also are cut from lengths of 1-in. stock ripped to 1½ in. widths. The top piece is 18 in. long, the bottom is 14 in. and the two side pieces are 9 in. A 12-deg. bevel is cut on the ends of the leg members as indicated in Fig. 6. A miter box, Fig. 7, will assure accurate miters, or the miter gauge of a table saw can be used for the job. Assemble the legs with glue and screws, and attach them to the underside of the bench by screws. Position the legs 9½ in. from each end of the bench.

Flat black was the color used for the original, and this color will go well with most decorating schemes. You may, however, want a natural finish or any of a number of stain finishes. If either of the latter two types of finish are to be applied, sand smooth all the slats and the edges of the spacer blocks before assembling the bench; sanding after assembly would be difficult. △△



7. Miter box makes accurate cutting of bevels on leg members easy job. Miter gauge on table saw also will make angles.

8. Bench is low enough to make ideal base for cabinets as shown. With a few cushions, bench provides extra seating.

Top of this charming table rotates, tilts, can be removed from the column.

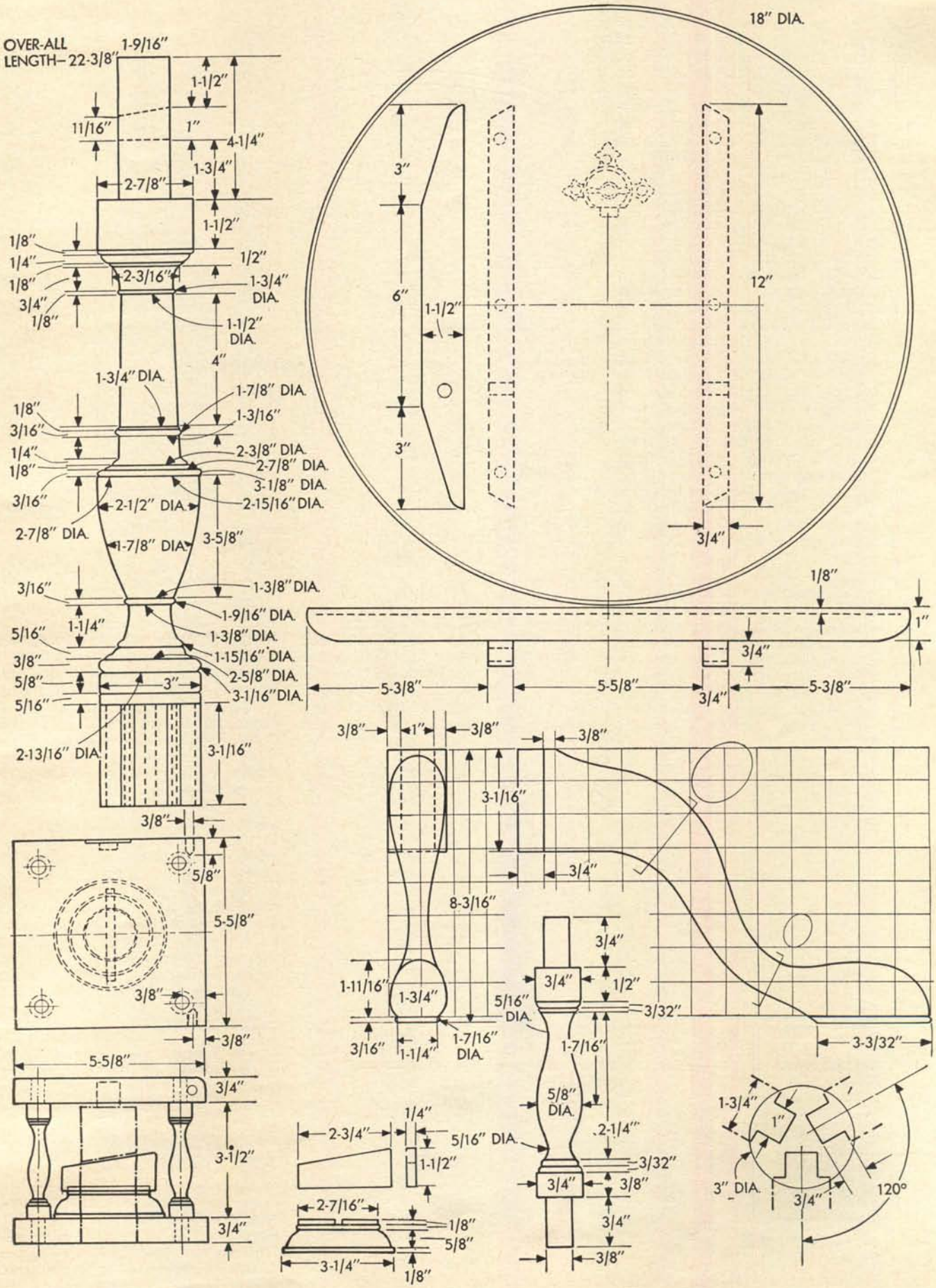
Tray-Top Table

(Circa 1780)

THIS CHARMING little table is a real conversation piece. The top rotates in a "lazy-susan" manner on the shoulder of the column, and also is pivoted on the "cage" so it can be tipped up vertically. Pulling out the wedge permits the top-and-cage assembly to be removed. We are not sure in the case of this table, but many items of furniture in the early days were designed for easy partial or complete disassembly as an aid in transporting the items. Also, from a practical standpoint, as with the tray-top table, there is less chance of the item being damaged when partly disassembled.

The original of this table is on display in the Nelson Gallery of Art in Kansas City, Mo. Should any of you readers be coming through Kansas City, we strongly urge you to visit this gallery and examine other pieces of furniture in the extensive collection on display. For you readers who will not get down this way, future items of furniture will be chosen from galleries and museums in other cities. Eventually we hope to make a complete "tour" of collections around the country.

As with many fine pieces of furniture made in the early days of our country, the tray-top table was made of mahogany. Any cabinet-grade hardwood can be used, and you may prefer a lighter-colored wood and finish to match the decor of your own home. Considerable lathe work is required for the table. We would suggest edge-gluing 1-in. stock to make the top, then setting it aside for the glue to set, while turning the main column. Not shown in the drawing, but apparent in the photo of the disassembled table is the projection at the top of the column. It is ¾ in. in diameter, and ¾ in. long. You may want to turn it as part of the column, or you may drill a hole at the end of the column


OVER-ALL LENGTH– 22-3/8"
1-9/16"
1-1/2"
11/16"
1"
4-1/4"
1-3/4"
2-7/8"
1-1/2"
1/8"
1/4"
1/8"
3/4"
1/8"
1/2"
2-3/16"
1-3/4" DIA.
1-1/2" DIA.
4"
1-3/4" DIA.
1-7/8" DIA.
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3-5/8"
3/16"
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1-9/16" DIA.
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3-1/16" DIA.
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2-13/16" DIA.
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3/8"
3/8"
5-5/8"
3/4"
3-1/2"
3/4"
18" DIA.
3"
6"
1-1/2"
3"
12"
3/4"
1/8"
1"
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5-3/8"
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1"
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3-1/16"
3/4"
8-3/16"
1-11/16"
1-3/4"
3/16"
1-1/4"
1-7/16" DIA.
3/4"
3/4"
1/2"
5/16" DIA.
3/32"
1-7/16"
3-3/32"
5/8" DIA.
2-1/4"
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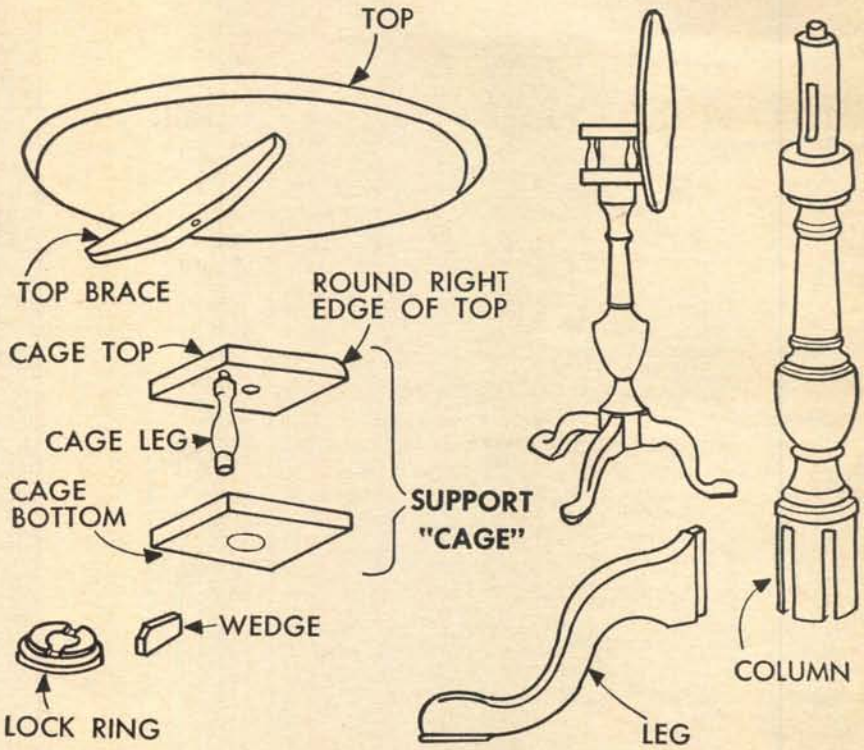
5/16" DIA.
1-1/2"
2-7/16"
1/8"
5/8"
3-1/4"
1/8"
1-3/4"
1"
3" DIA.
3/4"
120°

after the turning is done and insert a length of ¾-in. dowel. To lay out the mortises at the lower end of the column, set your dividers or compass equal to the diameter, then step off around the circumference to find the centers of the mortises. You may have to adjust the compass spacing slightly to exactly divide the circle into three sections. When you have found these centers, mark ⅜ in. each way to indicate the ¾-in. mortises and ⅞ in. each way from center to indicate the flats that are cut on the column. A mortising chisel in a drill press, or a drill and wood chisel then are used.

The three legs are cut on a band saw, then carved to shape. Make templates of cardboard to check the cross sections as indicated on the squared drawing. Before cutting out the legs, saw the tenons. After the legs have been carved and smoothed, fit the tenons into the mortises on the column. The fitting is a trial-and-error process, using a rasp and sandpaper to reduce the tenons until they just fit snugly in the mortises. Remove immediately any excess glue that is forced out during assembly, to prevent it from staining the wood.

Turn the four legs for the "cage", then make the top and bottom of the cage, clamping the two pieces together and drilling both at once to assure that the holes are accurately aligned. Bore the hole in the bottom member of the cage slightly larger than the 2⅞-in. portion of the table column, to permit it to turn easily. Note also that one edge of the cage top is rounded.



Turn the locking ring, using either a faceplate, or a tapered wooden "chuck" to hold the piece. Cut the notch in the ring, then fit it and the cage on the column and mark and cut the mortise that accepts the wedge. Cut the wedge and fit it to the mortise. The last member to be turned is the table top. Be careful when working on this piece not to damage the thin ring around the edge that gives the table its name. Cut the two reinforcing strips and attach them to the underside of the top with glue and screws driven in counterbored holes. They are spaced 5¾ in. apart, to allow clearance on each side of the cage top. Fit the dowel pivots through the strips and into the cage, but do not glue into place until the cage top has been trimmed and fitted to permit the top to pivot to a vertical position. Glue the dowels only in the cage top, not in the strips. To hold the top on the cage, use an elbow catch, fitting the catch on the underside of the table, the strike on the edge of the top member of the cage. The final step is to apply filler, stain and finish to the completed table. Full size plans are available for $3.00 from: Tray-Top Table, Dept. 1082, WORKBENCH, 543 Westport Road, Kansas City 11, Mo. △ △

Pulling out wedge permits the table top to be lifted off. Note that "lock ring" is notched to accept edge of the wedge. Table top and "cage" rotate on shoulder of column. Dowel in top of column fits hole in top member of the "cage".

Plastic-Surfacing Concrete Apron

WHEN SEVERE WEATHER broke up the surface of the concrete apron outside his garage doors, one homeowner used plastic to provide a new surface, eliminating the need for breaking up and pouring new concrete. The plastic material, originally developed to repair automobile bodies, contains epoxy resins that cause it to adhere strongly to any material. This factor permits a thin layer of the plastic to be applied, just enough to cover the roughened surface of the concrete. The plastic also is water and weatherproof when set, yet retains enough resiliency to prevent it breaking up under the heavy weight of an automobile. To provide skid-resistance, (the plastic has quite a smooth surface when set), sand was sprinkled on the plastic before it set. The sand was held to the plastic by the same strong adhesive qualities of the epoxy factor in the plastic. Another quality of the plastic that makes it ideal for the do-it-yourselfer is that it can be sanded, should it be necessary to shape the renewed surface after the plastic has set. The plastic material can be obtained wherever materials for auto-body repair are sold. △ △

After severe winter, surface of concrete apron in front of garage is chipped and cracked, definitely in need of repair.

Joint between asphalt drive and concrete apron is cleaned with chisel to assure that plastic makes good bond to the asphalt.

All loose material on concrete apron is removed, steel bar is used to chip away surface that has been damaged by frost.

Concrete surface now has been cleaned thoroughly; rough surface of concrete is ideal for making bond with the plastic.

After each batch of plastic has been mixed with hardener and troweled on concrete, sand is sprinkled on it for skidproofing.

Excess sand has been swept off plastic, asphalt drive has been coated with sealer. This is a week after job was finished.

INSTALLING HARDWOOD FLOORING

Photos and information courtesy National Oak Flooring Manufacturers' Association.

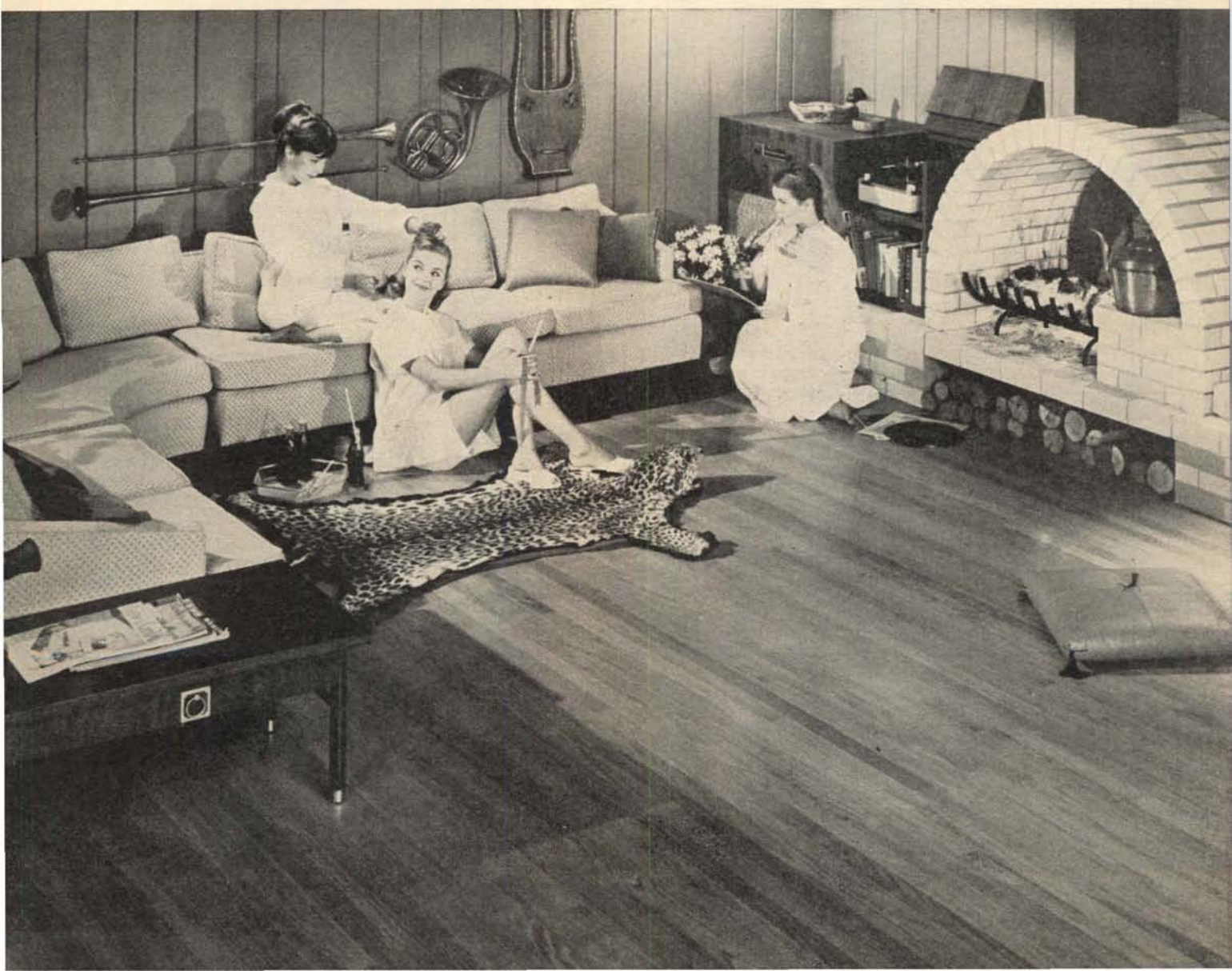
HARDWOOD FLOORS HAVE BEEN FAVORED traditionally by home owners because of their lifetime durability, natural beauty, ease of upkeep and long-term economy. With the emphasis on wood beauty in modern home planning, hardwood floors also are in the height of fashion.

Oak is the wood used most often. Next in popularity are hard maple, beech, birch and pecan. Other species used include walnut, cherry, ash, hickory and teak.

While the installation of hardwood flooring for an entire home is best entrusted to a skilled floor layer, a do-it-yourselfer who is adept at working with wood should be able to do an excellent job in a smaller area, such as a room addition or a remodeled attic. In conventional joist construction, as used in the project illustrated, Figs. 1 through 12, the hardwood flooring is installed over wood subflooring that should consist of 1-in. lumber in widths of 4 to 6 in. Boards wider than 6 in. are not recommended, as they are subject to excesive expansion and contraction, which will effect the flooring nailed to it.

In the very best construction the boards are positioned diagonally over the joists. This arrangement provides greater bracing strength, and permits installation of the hardwood flooring in either direction. If the subfloor is at right angles to the joists, the hardwood flooring can be positioned in only one direction, at right angles to the subfloor planks. Hardwood flooring should be installed only after all other construction is finished. All plaster work should be completely dry. Flooring is kiln-dried, and should be kept dry during and after delivery. The room in which the flooring is to be installed should be ventilated and heated to about 70 deg. Have the flooring delivered four or five days before installation and pile it loosely in the heated room. The moisture content of the wood will adjust gradually to match that in the room, which will help in assuring the dimensional stability of the flooring, and thus, the proper installation of the floor.

First step in the actual installation is to sweep the subfloor clean and cover it with building paper, preferably 15-lb. asphalt-saturated



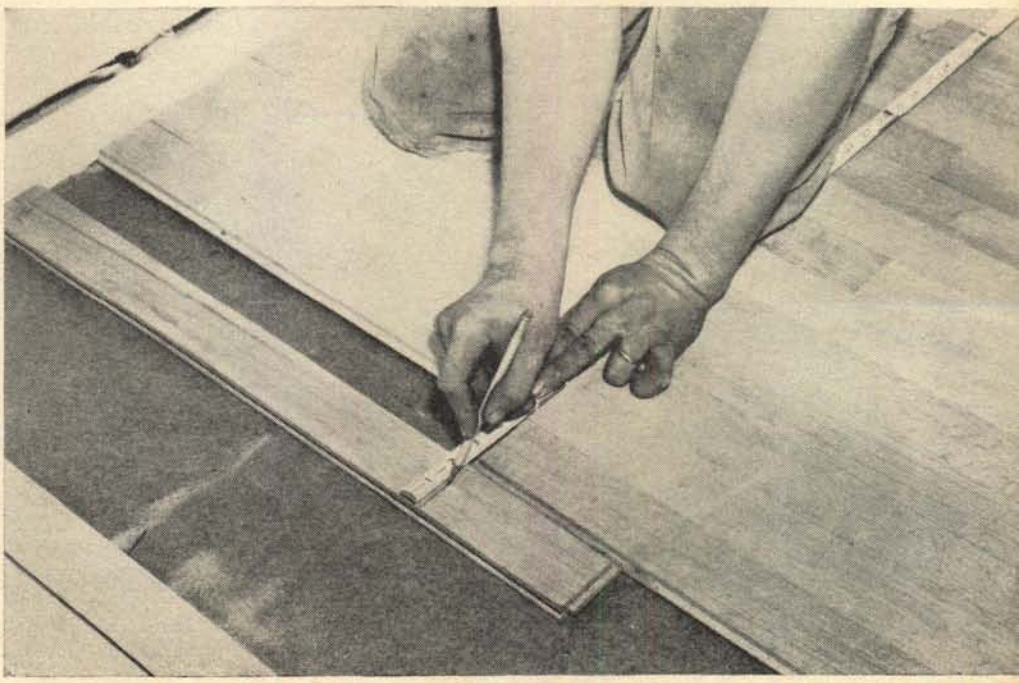
1. Sweep the subfloor clean, cover it with 15-lb. asphalt-saturated felt building paper. Stretch a string between two nails about 8 in. from a side wall, align the first course of flooring with the string, rather than a usually not-true wall.

2. Start first course with groove edge nearest the wall, both face-nail and blind-nail first course, with nails through tongues.

felt. Stretch a string along the length of the room between two nails positioned about 8 in. from a side wall. By lining up the first course of flooring at a uniform distance from the string, Fig. 1, rather than from the wall, you assure a straighter course. This is because very few walls, even in new construction, are perfectly true. While flooring strips generally are positioned parallel to the longest wall of a room, the alignment of the flooring in an adjoining room may determine that the strips be parallel with the shorter walls.

Place a long piece of flooring with the groove edge nearest the side wall and the groove end nearest the end wall. Space to be hidden by the shoe molding is left for expansion. In Fig. 1 the baseboard already has been installed. Its bottom edge is slightly above the level of the finished floor. Face-nail the flooring piece near the end as shown. Measure and nail progressively toward the other end, maintaining the same distance from the guide string. Do the same in lining up succeeding pieces in the course, using one nail every 10 to 12 in. Observe nailing recommendations of the National Oak Flooring Manufacturers' Association, or the manufacturer of the flooring used. For example, with flooring 25/32 in. thick and 1¼ in. or more wide, 7d or 8d screw-type nails or cut steel nails are approved. If steel-wire flooring nails are used, they should be 8d, cement coated. Machine-driven barbed fasteners of the size recommended by the manufacturer also are acceptable. After face-nailing the first course, toe-nail the pieces through the tongue edge, and toe-nail each succeeding strip in the same manner, Fig. 2. Countersink the nails so they do not interfere with grooves fitting tongues.

When a piece of flooring must be cut to fit the space at the end of a course, lay the piece in a reverse position from that in which it will be nailed and mark it for cutting, Fig. 3. The reason for reversing is to make sure the tongue end is cut off, and the groove end remains to join the tongue end of the previously installed piece. Stagger the joints of pieces in adjacent courses so that no joint is closer than 6 in. To arrange this, locate several



3. To fit a piece of flooring at the end of a course, hold piece in reverse position and mark it so tongue end is cut off.

4. Stagger joints of adjacent courses, so they are not grouped closely. Joint in one course should be no closer than 6 in. to joint in previous course. To provide for this, arrange several pieces in approximate relative positions in succeeding courses.

5. After nailing 3 or 4 courses, hold scrap of flooring at intervals along tongue edges and use a hammer to tighten joints.

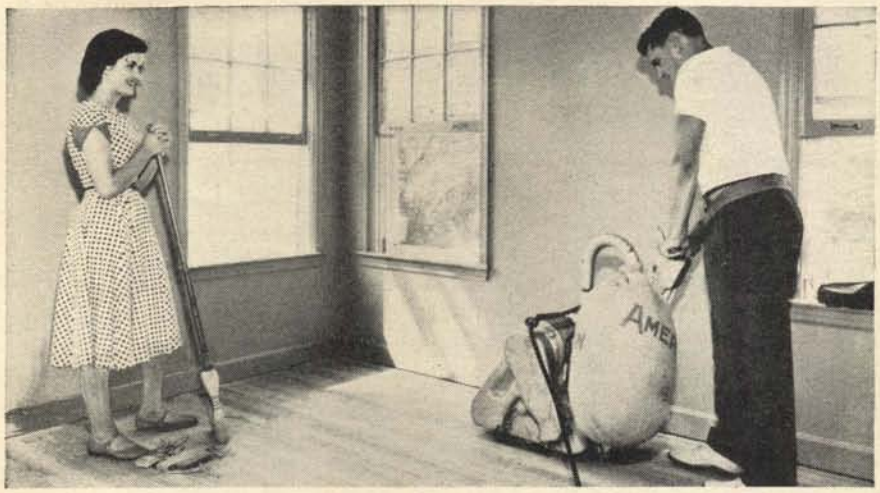
pieces in their approximate relative positions in succeeding courses before they are nailed, Fig. 4. After nailing each three or four courses, place a piece of scrap flooring at intervals against the tongue edges of the pieces in the last course, Fig. 5, and strike the scrap a couple of hammer blows. This drives the nailed flooring strips tightly together. Do not hammer against every single course.

To fit flooring around a door frame, hold the piece against the frame, parallel to the last course. Measure the distance between courses, and mark this distance at each edge of the door frame on the flooring strip, Fig. 6. Mark a line between the points, then saw out this notch. The operation will probably have to be repeated on the opposite side of the door frame. When you reach the opposite side of the room you will find there is no space to permit toe-nailing the last two courses. Just fit these pieces in place, then face-nail the last course, at the same time forcing it tightly against the previous courses with a pry bar, Fig. 7. If there is still a space after nailing the last course, that is too wide for the shoe molding to cover, cut pieces of flooring to the proper width and insert them. Face-nail these strips unless they are very narrow.

Rent an electric floor sander and an edger to finish the floor after it is installed, Figs. 8 and 9. Give the floor at least two sanding cuts, the first with No. 2 grit on the machine, the second with No. ½. For an exceptionally smooth surface, three or four cuts with progressively finer grits are recommended. The first cut can be at right angles to the grain, or diagonally to it. All succeeding cuts are made with the grain. Keep the machine in motion when the power is on to prevent gouging the wood. The edger, Fig. 9, is handy for sanding near walls and for small areas such as in closets. Manual sanding may be necessary in small spots, as behind pipes. Use the same grit of paper

6. To fit flooring around door frame, place strip flush against frame, measure gap between face edge of previous piece and groove edge of piece to be nailed. Mark this distance and width of door frame. Notch flooring strip to fit.

7. When opposite side of room is reached, there is no room to toe-nail last two courses. Fit pieces in, face nail last course.



8. To finish floor that is completely installed, rent a floor sander and an edger. Give the floor two sanding cuts, the first with No. 2 sandpaper, the second with No. ½. First cut can be diagonally across grain, all succeeding cuts should be with grain.

9. Floor edger is handy for sanding floor near walls, and in closets and other small areas. Use grit same as on sander.

10. Sweep and dust thoroughly, including window sills, door frames, baseboards. Varnish, shellac or lacquer may be used, but floor sealer, as being applied here, is recommended by most hardwood-flooring makers.

11. If natural finish is desired, use colorless sealer. Keep room ventilated, follow manufacturer's directions. After a few feet of floor have been covered, common practice is to wipe off excess sealer with clean cloths.

on the edger as on the big sanding machine for the same cut.

Sweep and dust thoroughly after sanding, so no dust will blow onto the floor and speckle the finish. A surface finish such as varnish, shellac or lacquer may be used, but floor sealer is being applied in Fig. 10. Sealer is recommended by most hardwood-flooring manufacturers today, as it penetrates the wood fibers and wears only as the wood wears. The sealer can be applied with a long-handled lamb's-wool applicator, a clean string mop or a squeegee. Use a colorless sealer if a natural finish is desired. After a few feet of floor have been covered with sealer it is common practice to wipe off excess, Fig. 11. Although a complete finish in itself, sealer may be used as a base for a finish, such as varnish.

Rent a polishing machine to save on time and labor. First, buff the floor lightly with a fine steel-wool pad, Fig. 12. On open-grained woods such as oak, it is best to follow with an application of paste filler. The filler is applied before the finish, however, if the finish is varnish, shellac or lacquer.

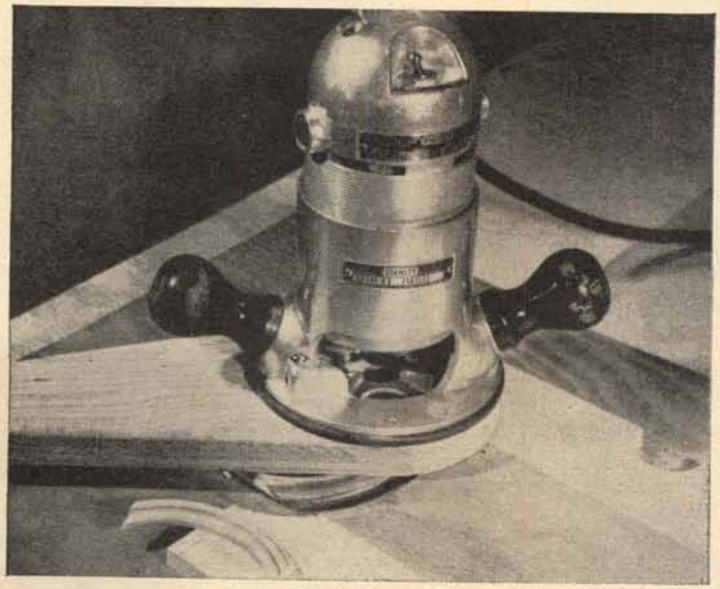
After the filler has dried 24 hours, wax and polish, using a buffing brush on the polishing machine. Use a paste or liquid rubbing wax designed for hardwood floors. Do not use a self-polishing wax, as this type wax contains water that may raise the grain of the wood and roughen the surface. △ △

12. Floor-polishing machine also can be rented, saves time and labor. Use pad of fine steel wool first, then wax and polishing pad on machine.

Photo courtesy Armstrong Cork Co.

SPECIAL CABINET TRIM

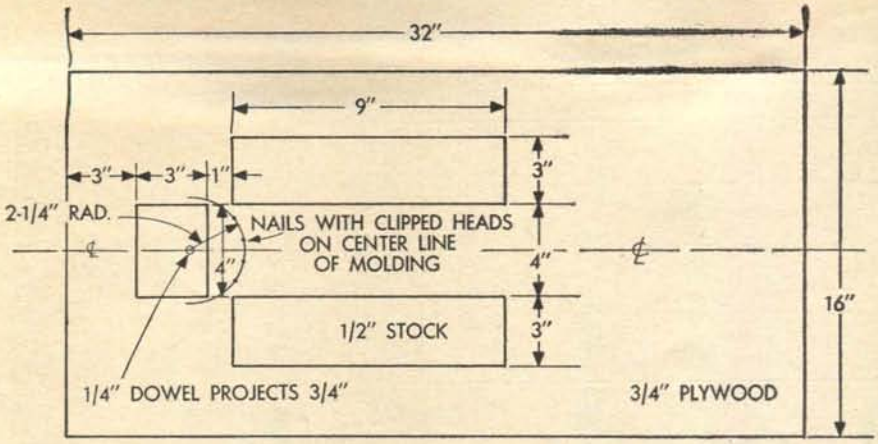
COKE KIMBROUGH

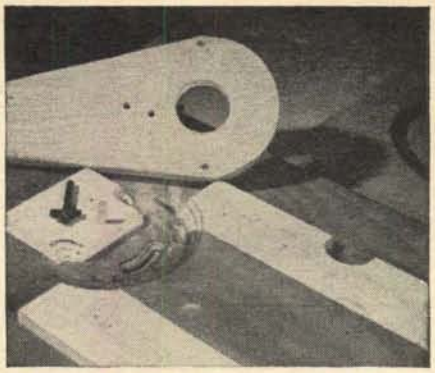


1. Router has made second pass, with special cutter, curved piece of trim has been shaped on second edge, has been also cut loose.

YOU CAN GIVE your present kitchen cabinet doors, or the doors for the cabinets you are building, a "French provincial" look by applying shaped molding. The molding can be applied with square, mitered corners, but a more attractive and professional look results by using curved molding at the corners. You can buy this molding in sets, in which are included straight lengths and the curves, but the cost is high.

My solution to this problem was to buy ordinary, low-cost screen molding for the straight lengths of trim, then make a setup for producing the curved sections with a router. It also was necesary to make a router bit that would produce the correct half cross-section. The completed bit is shown in Fig. 4, the dimensions for the bit are in Fig. 5. Incidentally, the same method of making bits can be used to make router bits of any profile for special jobs. An 18-in. length of tool steel, available at tool-supply houses, is hacksawed roughly to shape, then finished with a rat-tail file. When the profile of the bit matches the screen molding that you have pur-





3. Shown here are components of curved-trim cutter: Special bit, board with guides, auxiliary base for router.

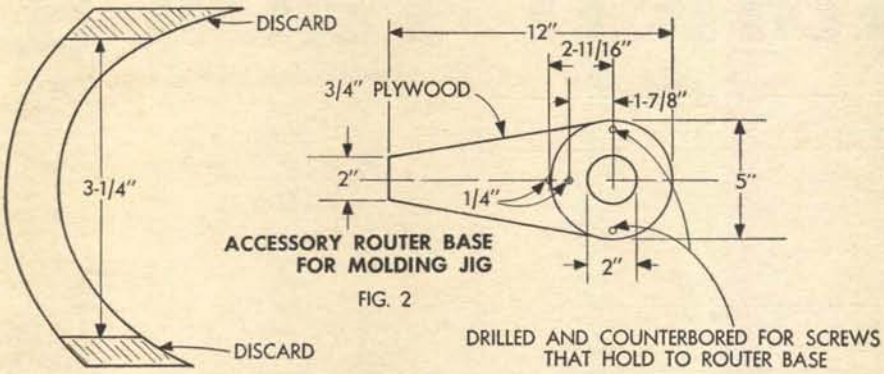
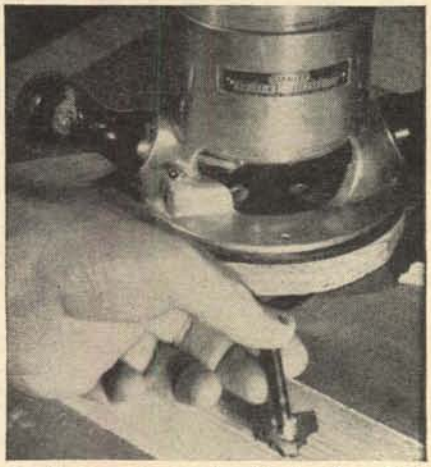


FIG. 2



4. Shop-made router bit is shaped to match cross section of screen molding at 45-deg. corner angle.

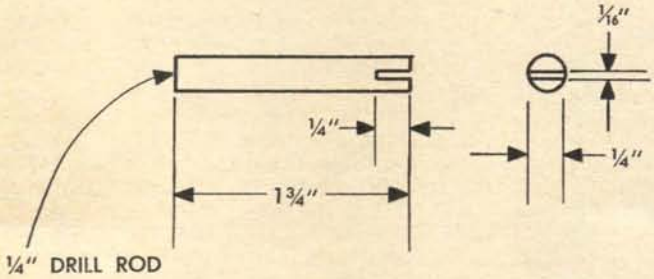
chased, file a clearance of about 15 deg. on the cutting edges of the bit. Now, cut a piece of ¼-in. drill rod to length of 1¾ in. and saw a slot ¼ in. deep in one end. File the notch as necessary to accept the steel flat, then assemble the bit and silver-solder it together.

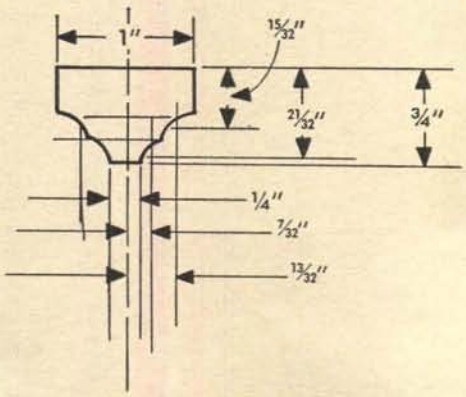
(The flat stock used for the original project is Starrett No. 496 Oil-Hardening Precision-Ground Flat Stock. A 3-ft. length of ¼-in. drill rod also was purchased from the Starrett Co. in Athol, Mass.)

The curved molding strips are made by fitting a portable router on a pivoting auxiliary base, the base having two holes spaced the width of the molding apart. The holes fit over a dowel in the jig. Dimensions are given in Fig. 2 for the auxiliary base and the jig. Nails are driven into the jig along the center line of the curved trim piece. The heads are clipped off, then the piece of stock is slipped between the holding members and pressed down on the nails. The first cut is made at the end of the stock, then the router auxiliary base is lifted and fitted on the second hole. The second pass shapes the other half of the molding, and also separates the molding from the stock.

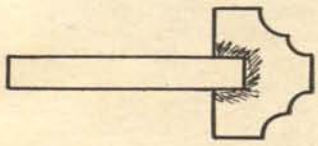
Some practice is required to do a good job of shaping, and most pieces will have to be sanded after being shaped. As is noted in Fig. 2, the ends of the curve are cut off and discarded. In Fig. 1 is shown the setup in operation, in Fig. 3 are shown the components of the jig, and the special bit. △ △

SPECIAL ROUTER BIT



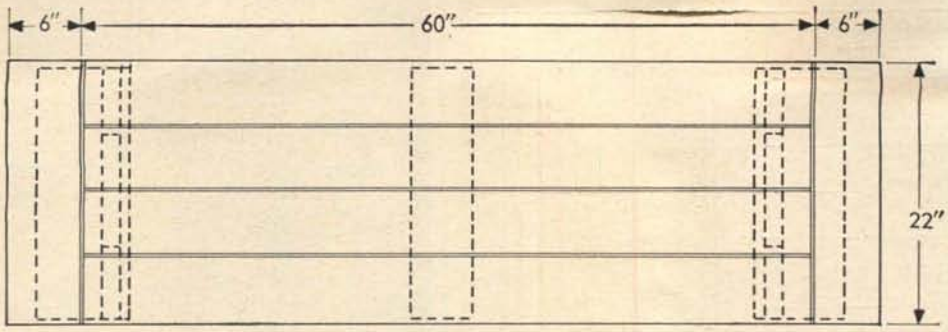


BIT SHAPED FROM 1/16" x 1½" x 18" FLAT-GROUND OIL-HARDENING TOOL STEEL

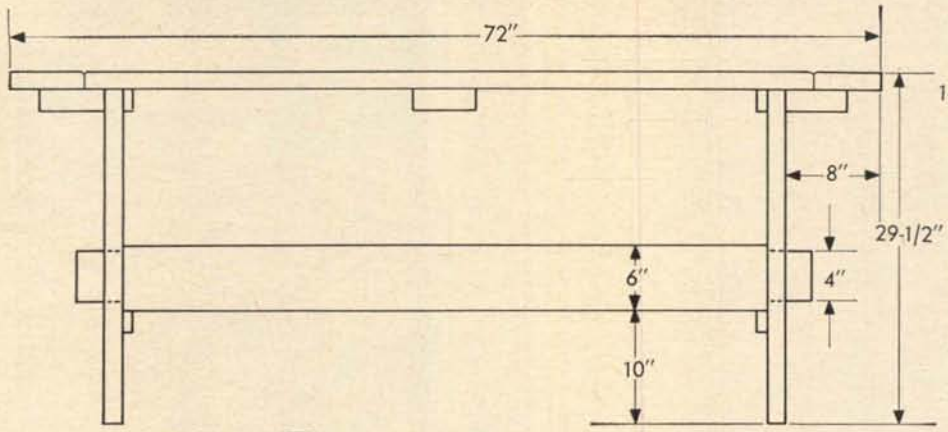


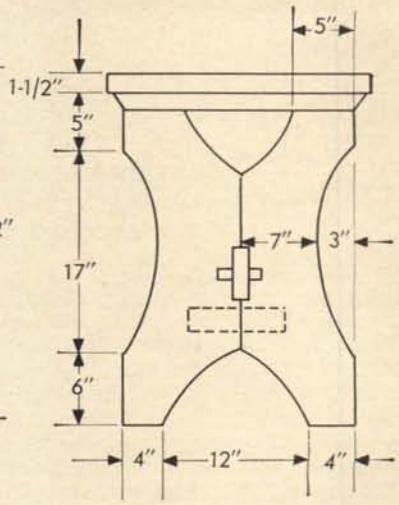
BIT ASSEMBLED WITH SILVER SOLDER

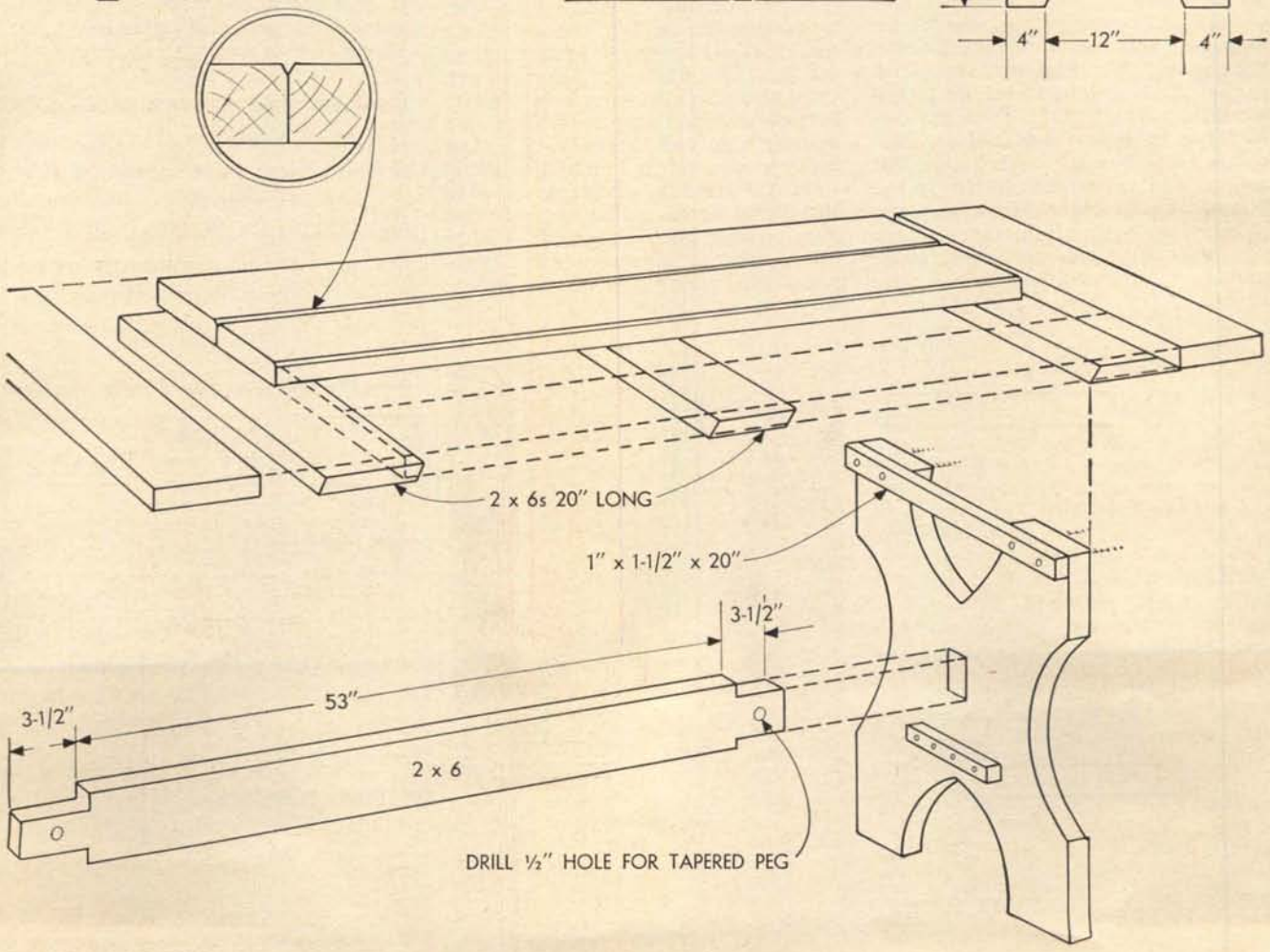
FIG. 5



Twin Ranch Tables







When tables are not being used to enlarge a dining table, they fit behind couches. They also can be used as library tables, and for a number of other purposes.

THESE ATTRACTIVE TABLES are sturdy enough to be used outdoors on a patio, yet will look well in a recreation room that has a "Western" decor. The original tables were made to enlarge the seating capacity of a dining room table to accommodate a family reunion, so the height was made the same as the dining table. The height can be changed to suit. When not utilized as table extenders, the original units are placed behind sectional couches and used as all-purpose tables. Their size would make them handy for a number of uses. If the tables are to be used only occasionally, or seasonally, they are readily disassembled. The tapered pegs are pulled to permit removing the stretcher, then the cross braces on the legs are removed by taking out the screws that also hold the legs to the end brackets on the underside of the table top.

All stock used in the original tables is 2-in. redwood lumber. The finished table was sanded smooth and several coats of paste wax was applied. If the tables are to be used outdoors, a sealer or finish designed for exterior use should be applied. The bevels on the edges of the planks used for the table top are optional, being used only for appearance. If lumber other than redwood is used, be sure it is straight-grained and free of knots. For the top of the table four 2 x 6s are required, each 5 ft. long. The end pieces for the top also are 2 x 6s, and will be about 22 in. long. This measurement is determined by the width of the assembled 2 x 6s of the top. The halves of the legs are cut from 2 x 12s, then fastened together with brackets. The lower bracket is screwed to the leg halves, the upper bracket is fitted with screws long enough to pass through the leg and drive into the lengths of 2 x 6 that are screwed to the underside of the top assembly to hold the planks together. △ △

Sections of the legs are held together with brackets screwed to them. They are readily disassembled for storage.

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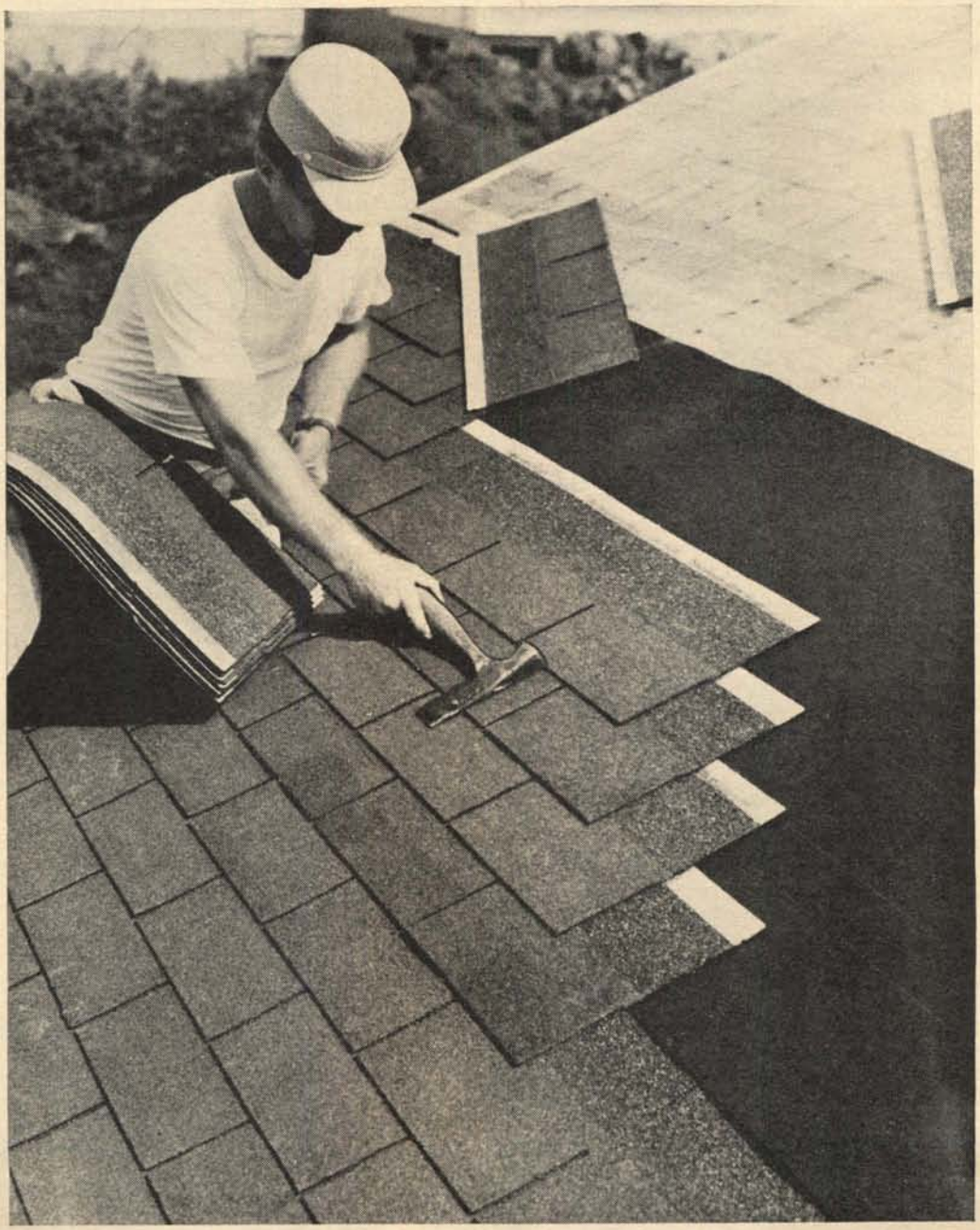
Applying Asphalt Shingles

When professional installs asphalt shingles he uses special hatchet-shape tool. Shingle spacing is gauged by fitting pin in one of several holes in blade of tool.
Photo courtesy Flintkote Co.

MOREY SALVA



NAILING ASPHALT SHINGLES to a roof is a fairly simple job, yet too often the shingles are improperly applied and result in a roof covering that leaks during heavy rains and is easily damaged by winds. The main problems are the using of the wrong lengths of nails, and locating the nails improperly.

Use only 11 or 12-gauge galvanized roofing nails with heads ⅜ in. in diameter or larger. For new wood decks, use nails 1¼ in. long. When shingling over an old asphalt roof, use 1½-in. nails and for applying asphalt shingles over old wood shingles, use nails 1¾ in. long. As a rule, nails should penetrate about ¾ in. into the roof deck.

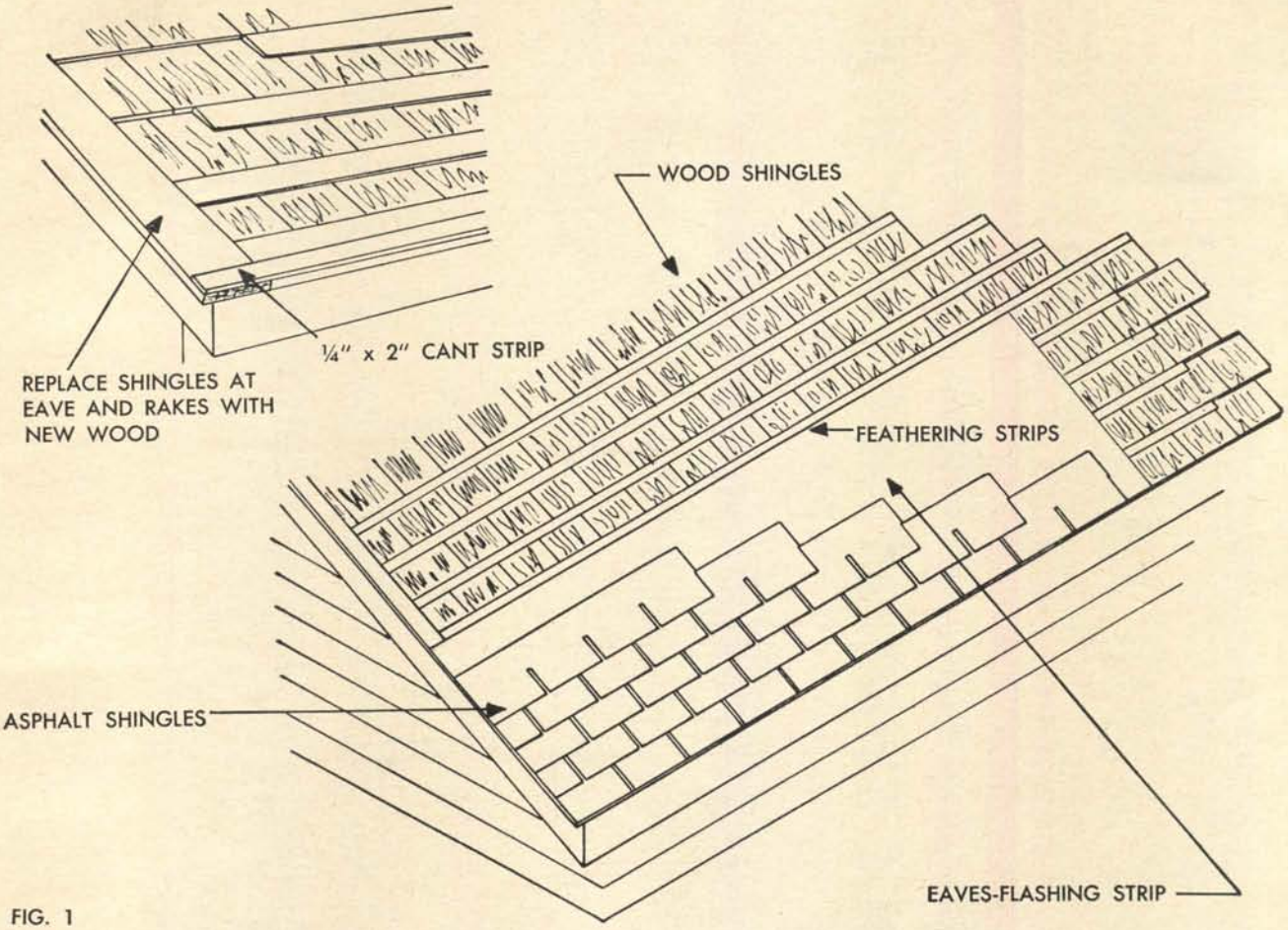


FIG. 1

Nails must be driven straight so that the shingle will not be cut with the edge of the nail head. Also, even when a nail is driven straight, the head of the nail should never penetrate the surface of the shingle.

The proper nailing methods to assure optimum weatherproofing with various types of shingles are shown in the drawings.

Fig. 1. When applying asphalt shingles over old wooden shingles, the first step is to nail down all loose shingles. Warped shingles should be split, the individual sections nailed down separately. Nail beveled strips of wood along the butt ends of the old courses, then apply a flashing strip of roll roofing along the eaves. This assures a good foundation for any type asphalt shingle.

Fig. 2. Giant individual shingles: When applying these vertically (American method), use two nails in each shingle. Nails are located 1½ in. from the side edges, 6 in. up from lower edge.

Fig. 3. Individual hexagonal shingles (staple types): Two nails and one staple in each. Locate nails 1 in. up from bottom of each shoulder tab, 1-in. from ends. Drive staple into lower corner of each shingle so it fastens adjoining tabs of shingles in course immediately below, but not upper corner of shingle in second course down.

Fig. 4. Two-tab hexagonal strip shingles: Use four nails in each, located horizontally on line

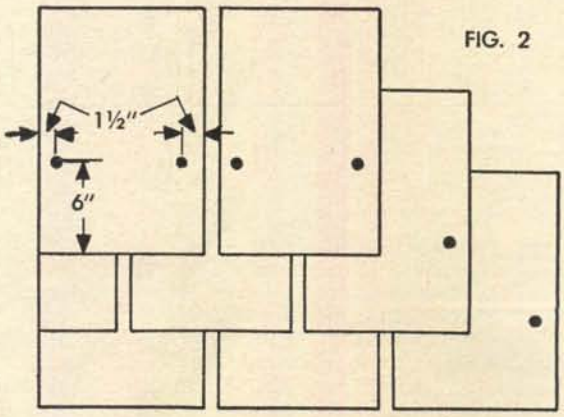


FIG. 2

5¼ in. up from exposed butt edge. One nail 1 in. from each end, one nail ¾ in. in from each angle of cutout area.

Fig. 5. Giant Individual strip shingles: Applied horizontally (Dutch method), two nails and one fastener in each shingle. Laying shingles from left to right, locate nails in upper left and lower right corners 1 in. from side edge, 1 in. from top or bottom. Nail positions are reversed when

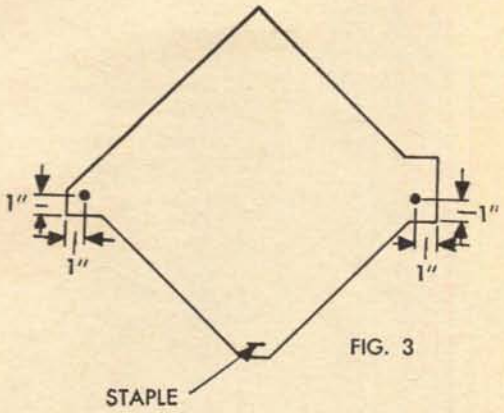


FIG. 3

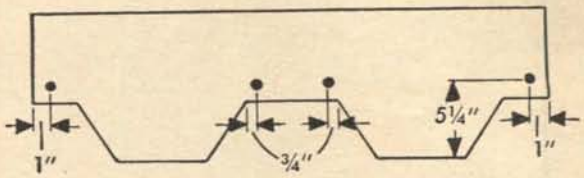


FIG. 4

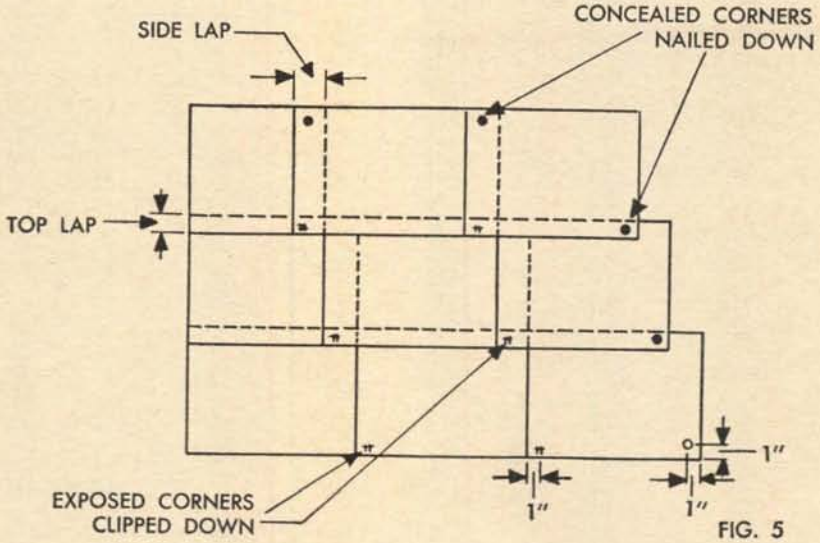


FIG. 5

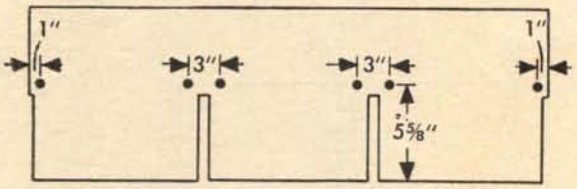


FIG. 6

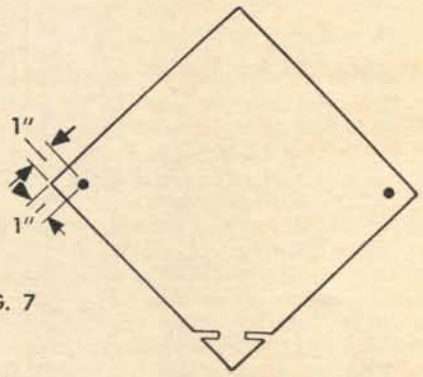


FIG. 7

laying shingles from right to left. Use staples to secure exposed lower corner to overlapped corner of adjoining shingle in same course and hidden corner of shingle in course below.

Fig. 6. Three-tab, square-butt strip shingles: Locate nails on horizontal line 5⅝ in. from exposed butt edge; one nail 1 in. from each end, four more nails are spaced 3 in. apart, over cutouts. It is important to avoid the common mistake of driving nails too high, which lets wind peel off the shingles. Align shingles before nailing to avoid buckling. Start nailing at end nearest to last shingle in course, work toward other end.

Fig. 7. Individual hexagonal shingles (interlocking): use one nail in each horizontal corner. Locate nails 1 in. in from each edge. Lower corner of shingle is secured by inserting locking tab under edge of adjoining shingles in course immediately below.

FIG. 8

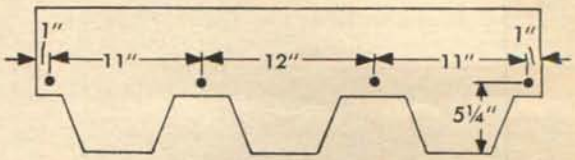
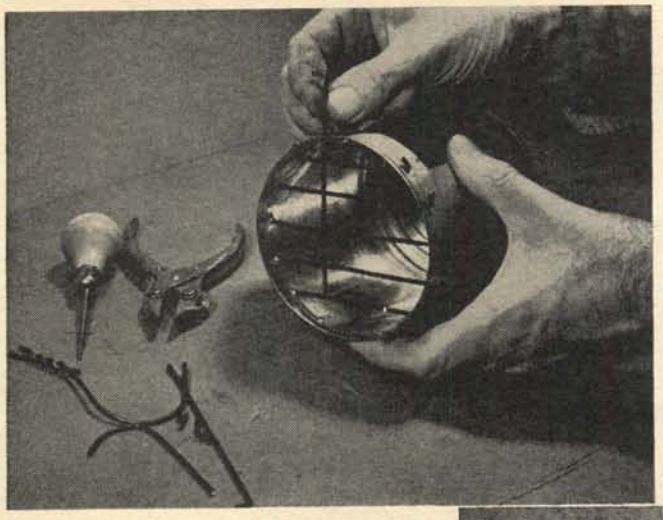


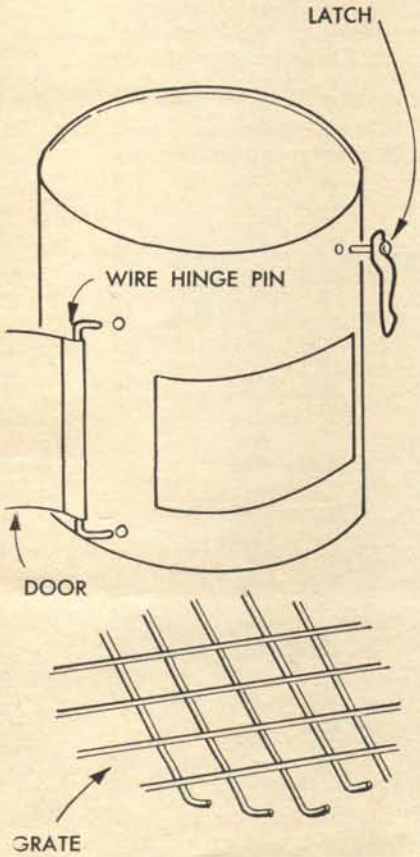
Fig. 8. Three-tab hexagonal strip shingles: Four nails for each shingle, located 5¼ in. from exposed butt edge. Locate one nail 1 in. from each end and center other two above cutouts. Because of their length these shingles must be carefully aligned before nailing. Procedure here is same as for square-butt strip shingles. △ △



RANGE-TOP FURNACE

WALTER E. BURTON

Coat-hanger wires are fitted in holes punched near lower edge of can to form "grate". Door is hinged with wire pin.



HEAT FOR THIS miniature furnace is provided by a gas or electric range or hot plate. It is ideal for heat-treating and tempering small tools and other items, and for preheating articles that are to be silver-soldered with a propane torch.

Shell of the furnace is a food tin about 4 in. in diameter, and 4 or 5 in. high. Punch holes about ¼ in. from the lower edge, and "lace" lengths of coat hanger-wire at right angles to form a grate. A door is cut from another food tin and pivoted over an opening cut in the furnace shell. Punch several holes near the top edge of the shell on the side opposite the door opening, to permit the escape of burned gases. If the door will not stay loosely closed by itself, a latch can be shaped from metal, as indicated, and operated with tongs. When you first fire up the furnace there will be considerable smoke as the coating on the metal burns away. △ △

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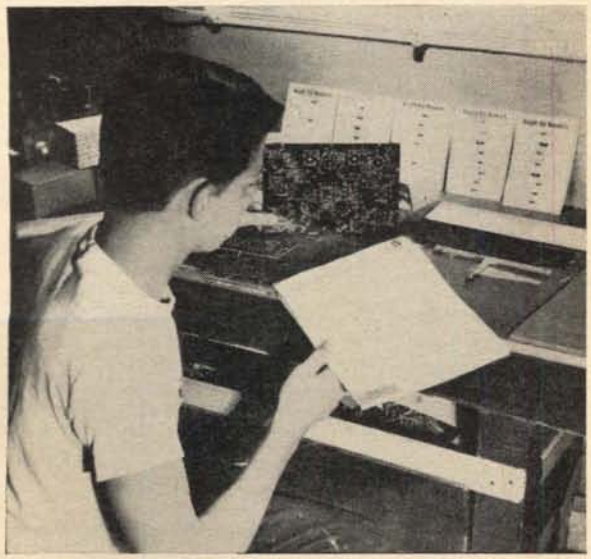
KIT-BUILT CB TRANSCEIVERS

Completed unit is attractive, edge-lighted panel is easy to read. Press-to-talk switch is bar in operator's left hand.

AFTER BUILDING a number of electronic kits in the past few years, our conclusion is that the less you know about electronics, the better job you will do. The novice kit builder follows each step carefully, checks it off when it is finished. The experienced electronic hobbyist tends to skip steps, making the assembly his own way, and getting into trouble. A couple of years ago we put together a pair of Heathkit CB-1 superregens; this time our test units were Knight-Kit C-27 superhets, provided by Allied Radio of Chicago.

Instructions supplied with the C-27s are excellent, which tends to confirm the story we hear that almost as much time and money are spent on the instructions as on developing the kit. The C-27 incorporates a printed-circuit board that simplifies assembly, but which also can present problems. After assembling the kits we made a frequency check and peaked the receivers, then took them to the laboratory for testing. The sensitivity of the receiver portion of the C-27s proved to be excellent, with 1 microvolt producing 10 db signal-plus-noise-to-noise ratio. Selectivity was extremely good; adjacent-channel rejection was more than the 30 db stated in the specifications. Audio output was adequate, with low distortion for most applications. The noise limiter (it has an off-on switch on the front panel), designed to supress impulse-type interference, was not too effective in rejecting ignition noise. Squelch action (controlled from the panel), was good, but had a "soft" feeling, not being as positive as in some other units. The accuracy of the tuneable dial could not be determined, as the markings do not correspond to the various channels. However, the tuneable portion of the receiver definitely does **not** drift. In crystal-receive position, (there is a choice of two crystal-receive positions, and tuneable), sensitivity is partly controlled by the tuneable-dial setting, which is caused by the tuning of the first I.F. by the dial. In other words, when you change from one crystal to another by the switch, you must tune the dial near that channel to get maximum reception. R.F. output was low on the units tested, as com-



Printed-circuit board simplifies assembly, also is weak point. Instructions are excellent, all components labeled.

Large drawings show exactly where every component goes on printed-circuit board, builder has no trouble.

Cold-solder joints are a problem with kits. Be very careful with your solder joints on the printed-circuit board, make sure every joint is soldered well. It is not long before you can slip the tubes into their sockets, set is ready.

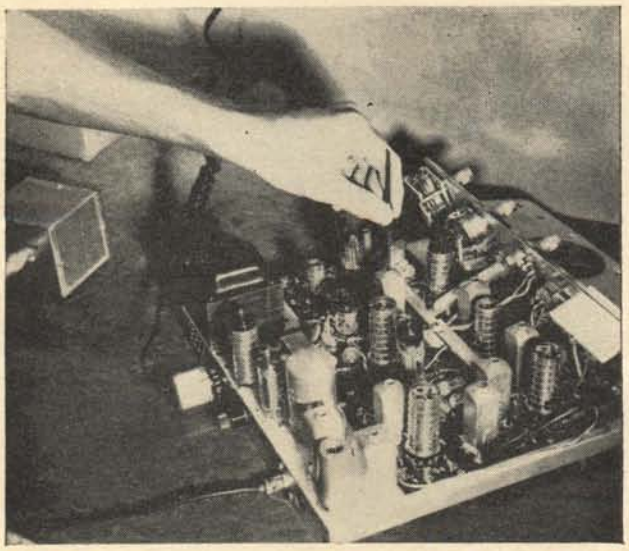
pared to more expensive units, although adequate. Modulation is fair with the speaker used as a microphone, much better when an external mike is used. The crystal oscillator was found to be unstable and output frequency may be varied by both the oscillator tuning and the final tuning. This makes mandatory a frequency check after the unit is installed. (We recommend this with any unit, kit or factory-wired.)

To summarize: The C-27 has an excellent receiver with a transmitter that does not equal the receiver in quality. Mechanically, the printed-circuit board flexes excessively when tubes are removed or installed, inviting broken printed paths or solder connections. Keep the board well supported when changing tubes.

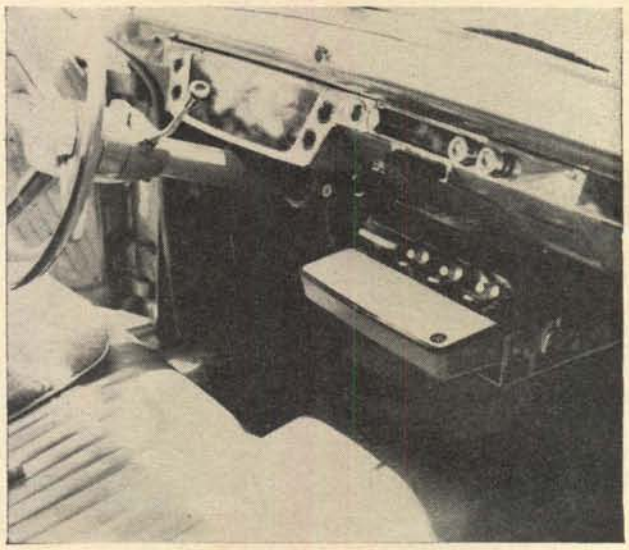
After the laboratory tests we ran our "average-user" tests. We found the C-27 to be quite long from front to back, which makes it difficult to install conveniently in some late-model cars. Where it can be installed, the optional bracket holds it firmly, premits it to be removed and replaced readily. Base and mobile reception were excellent under all conditions.

The C-27 makes an especially fine base unit for several reasons. The edge-lighted plastic panel keeps all controls in view even in a darkened room, and the squelch control keeps the set silent when no signal is being received. The wife finds the press-to-talk bar convenient when she is busy in the kitchen, and since there is no mike to be picked up, only the switch bar gets covered with flour or soap suds.

For the price of $79.95 the Knight-Kit C-27 is a good buy, and makes an ideal base station. It can be assembled in a few evenings by anyone who can use a soldering iron. We do recommend, as with any CB transceiver, that a licensed radiotelephone technician give it a frequency check before it is put on the air.△△

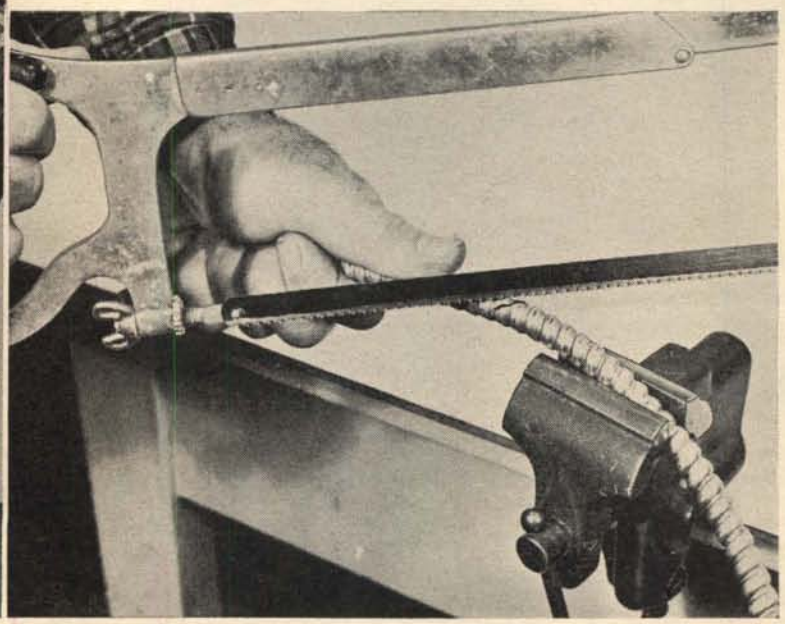


Final adjustments were made with a dummy load (Seco Attenu-Load). We recommend a technician check set.



Length of C-27 front to back presents a problem when making mobile installation. Here unit is bolted to floor.

WORKSHOP

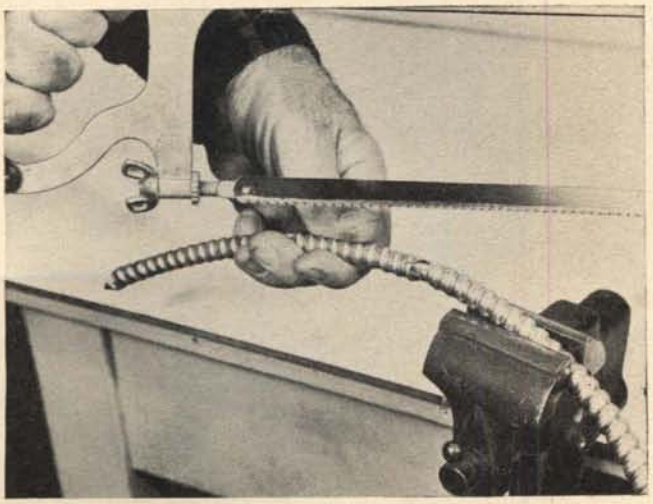


1. BX cable can be stripped on the job by stepping on cable, pulling it around knee tightly, cutting single spiral with hacksaw. Vise also can be used.

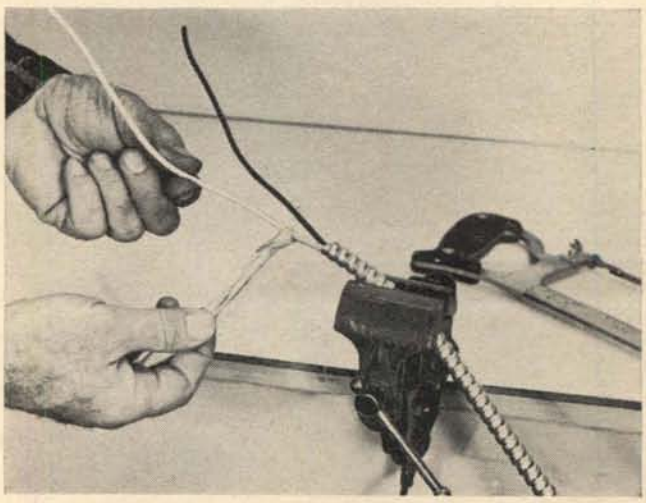
Wiring With BX Cable

WIRING WITH ARMORED CABLE, commonly called "BX" cable, is required by the building codes of many communities where nonmetallic-covered cables, generally known as "Romex", are not allowed. Except for the cutting of the armored covering to remove it from the inner wires, using BX requires the same techniques as using any other type of wire. There are two methods, Fig. 1, of cutting the BX covering: One is used at the job site where you stand on a length of cable, pull it up over your knee and cut diagonally across one of the spirals of the armor. The BX also can be held in a vise to permit cutting the armor, but there is the problem of having a vise handy to the job, and of knowing the exact length of wire to be used for a particular location. Using either method, be careful not to cut the insulation on the inner wires. When you have cut almost through the metal covering, twist it back and forth several times and pull it off the inner wires, Fig. 2. Next, remove the paper wrapped around the individual wires, Fig. 3.

When running a circuit to a new location, as to your workshop, a re-

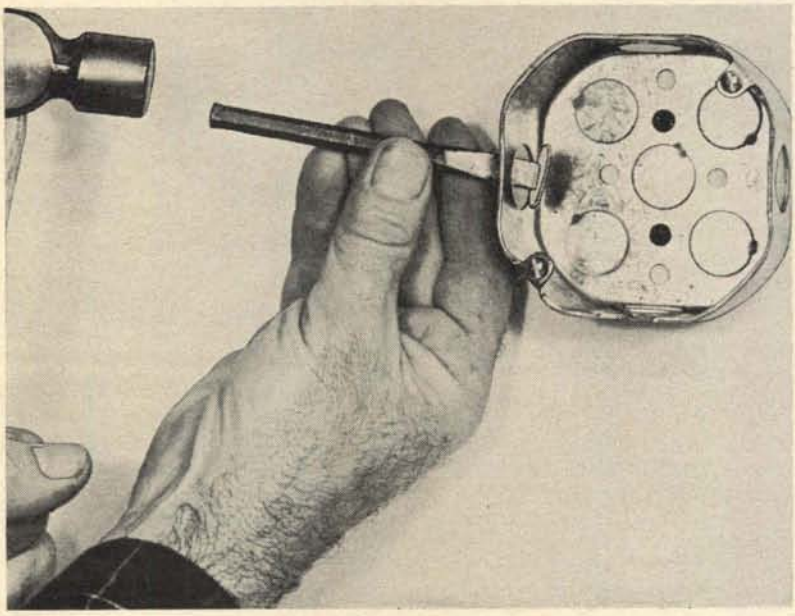


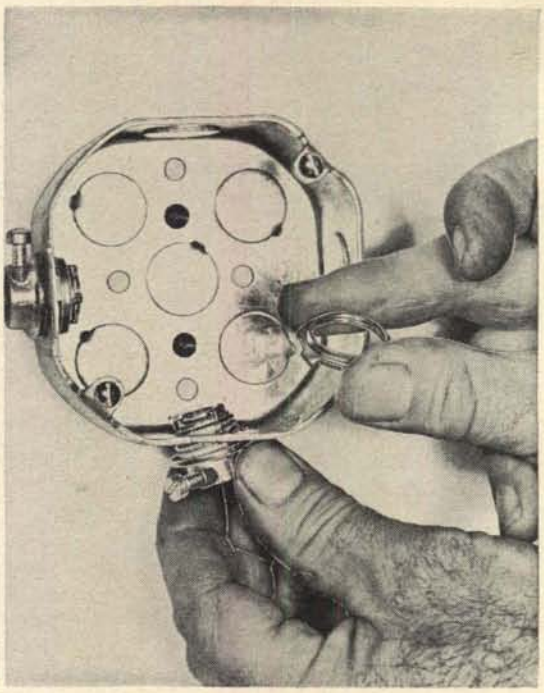
2. When single spiral of cable is cut, it can be pulled off the wire easily. Use care when sawing not to cut into wires.



3. Unwind the paper cover over the single strands of insulated wires, tear off paper so wires are clear, can be stripped.

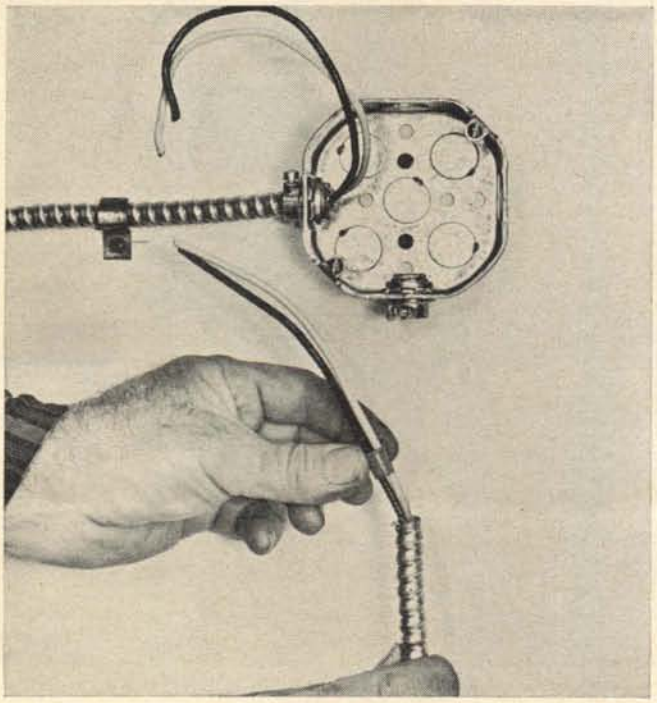
TECHNIQUES:



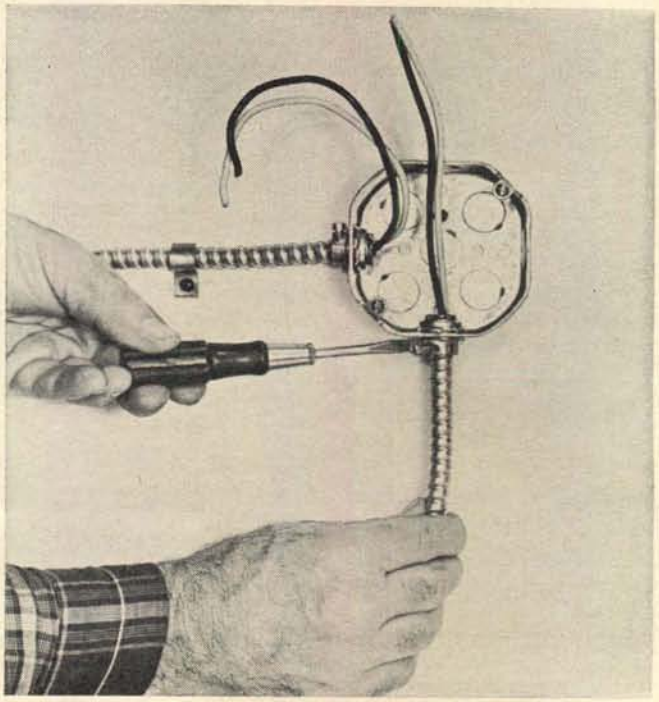


4. After firmly attaching junction box to wall, knock out tab with screw driver or chisel. Remove only knockout plugs that will be used and fitted with connectors.

modeled attic or a room addition, start at the new location and work back to the power source. (Be sure to pull the fuse before making any connection to a "hot" wire!) All wire splices and connections must be made inside special metal boxes. In the case of a new circuit, the power lines generally are spliced inside a 4-in. octagonal box, Figs. 4 through 11. Securely attach the box to its permanent location first. Then, determine from which direction the wires are to be run into the box. Use a screw driver or chisel, Fig. 4, to bend the knockout plugs, then twist them free with pliers. Insert BX connectors (a ½-in. hole is required for these; some boxes have both ½ and ¾-in. knockouts), and secure them in place with a locknut, Fig. 4. Position the connectors so the screw in each one is easily reached with a screw driver. Now, measure the length of BX needed to run from



5. Before fitting cable into connector at box, slip fiber bushing into end of the cable to protect wire from the sharp metal edges.



6. Tighten screw in BX connector at box securely. Cable must be held firmly so that it will not be pulled loose.

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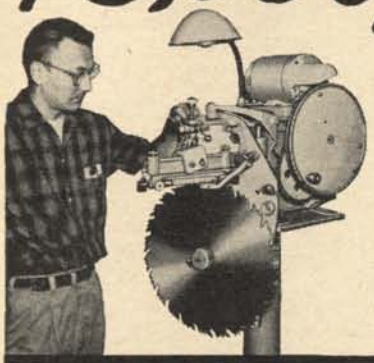

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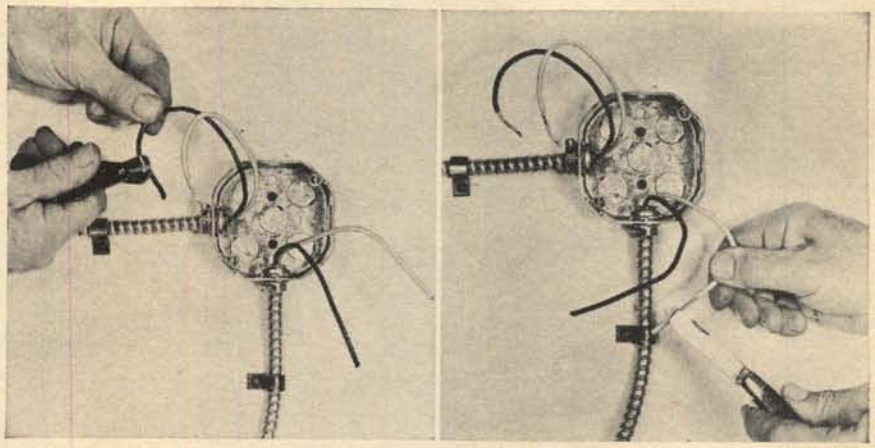
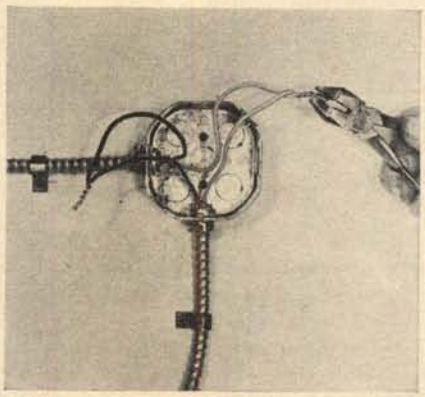
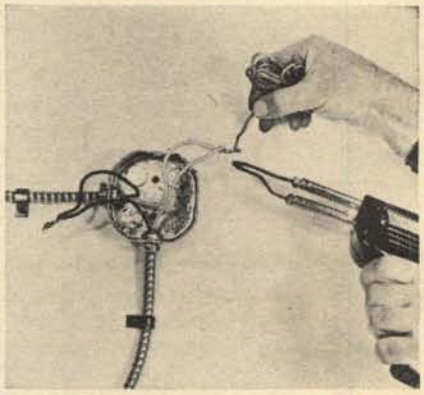


7. Insulation is stripped from the ends of individual wires to permit making connections. Special wire stripper is quick and easy, but knife can be used.

one box to the next, allowing for bends, plus an additional 2 ft. for slack and to permit stripping the armored covering where the wires enter the boxes. Remove a 10-in. length of the armor and insert a fiber bushing between the wires and the armor, Fig. 5. Slip the wires into the connector so the armor goes as far as possible, then tighten the connector screw firmly, Fig. 6. Strip about 1 in. of the insulation from the ends of the wires, using a special wire-stripping pliers or knife, Fig. 7. Where circuit wires are to be spliced, twist them together in a neat, tight spiral with pliers, Fig. 8. For the best mechanical and electrical connection, solder the wires together with rosin-core solder, Fig. 9. Finally, wrap the connection with rubber

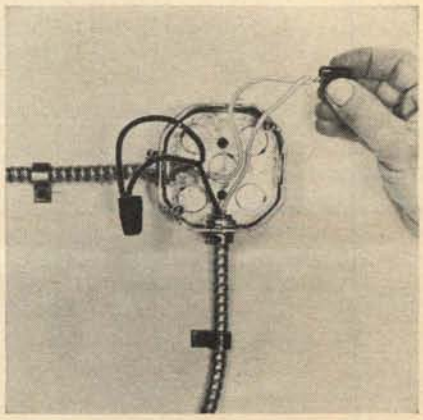


8. When wires are to be joined, twist ends together, make sure wires are same color, except as in switch circuit.

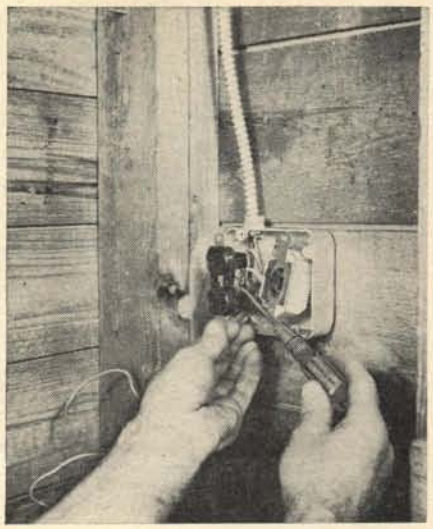


9. For most efficient connection, solder wires together, using rosin-core solder. Solder gun does job quickly.

10. Soldered connection then is covered with rubber tape, then plastic or friction tape is wrapped over rubber.



11. Plastic wire nuts may be used instead of wrapping with tape. Turn nuts on tightly so no bare wire is exposed.



12. Square surface-mounted boxes will accept switches or receptacles, are used where appearance is not important.

tape, then cover with friction or plastic electricians' tape, Fig. 10. As an alternate, use special plastic connectors, Fig. 11, that are screwed on to cover completely the bare portion of the wires.

Note that the black-coated wire is attached to the black, the white to the white. In all instances the

13. Cover plates of various kinds are available for square boxes, give this installation a neat appearance.

white-coated wire, the "neutral" side of the circuit, is kept intact throughout the circuit. If a break is required, it is the black wire that is cut. As indicated in Fig. 17, in a switch circuit, black and white wires sometimes must be connected together. BX cable must be supported by using special clamps or with staples, as shown.

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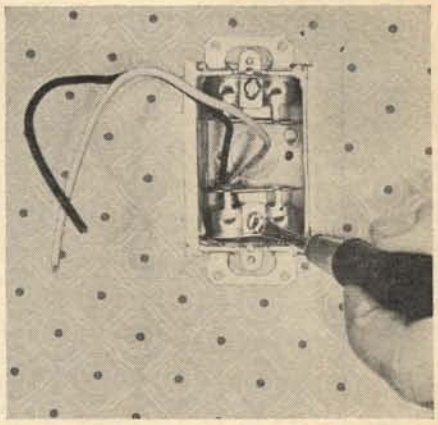
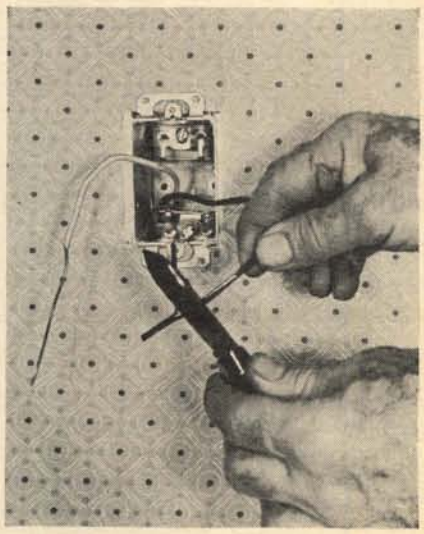
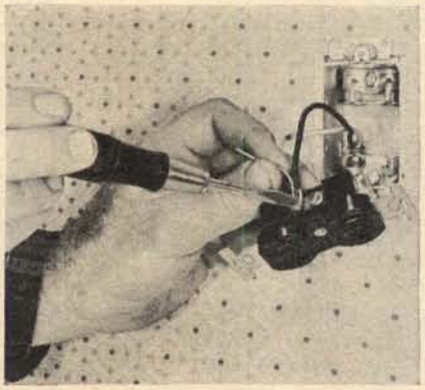
mounted boxes can be used, Figs. 12 and 13. Square boxes, such as shown, are available in various sizes and different types of electrical service units can be installed in them. In the box shown a receptacle and a switch are installed. Metal cover plates are available to cover any combination of units. Where appearance is important, as in the home, flush-mounted boxes are used. Figs. 14, 15 and 16. Note that this type box has "built-in" connectors, each of the connectors being capable of clamping two cables. The BX is clamped in the box, the ends of the wire are stripped, then bent and attached to the switch or receptacle. There are various ways of attaching the flush-mounted boxes, including sheet-metal clips that are bent over the edges of the box, after "ears" on the clips are slipped into the opening cut into the wall. This type clip eliminates the need for other fasteners. Check with your hardware or building-supply dealer on the various attaching devices, as well as the various types and sizes of boxes required for switches, receptacles and connections. △△



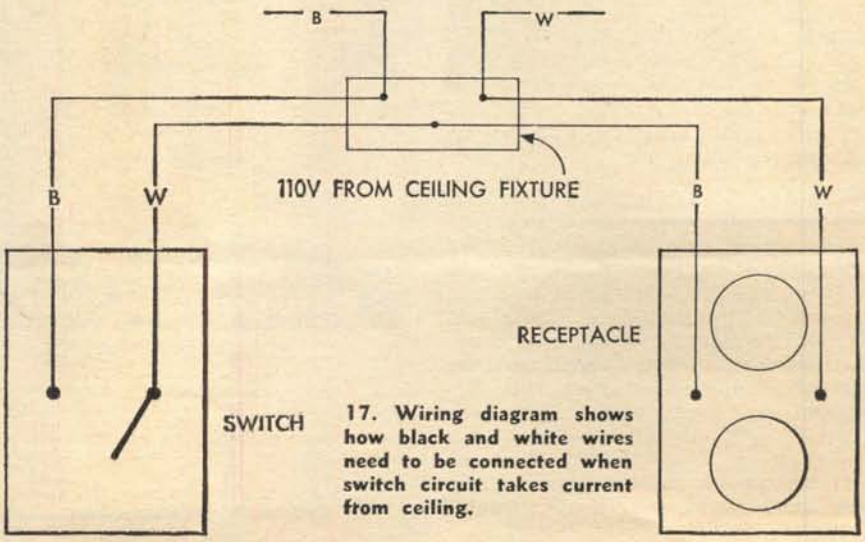
14. In flush-mounted box, BX cable is held by "built-in" connectors; one screw tightens down on two cables.

15. Wires extend 8 to 10 in. into box, end 2 in. of insulation is stripped off to permit making connection.





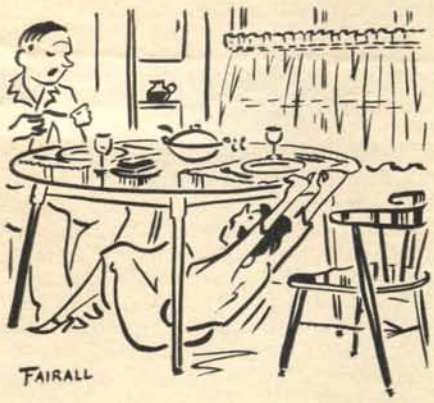
16. Wrap wire around screws clockwise, tighten screw firmly so wire cannot come loose when receptacle is moved.



17. Wiring diagram shows how black and white wires need to be connected when switch circuit takes current from ceiling.

IN THE NEXT ISSUE . . .

Fabulous Finishes For Fir Plywood
Lathe-Turned Nativity Set
Compass Table
Child's Sofa and Chair
"Miterless" Picture Frames



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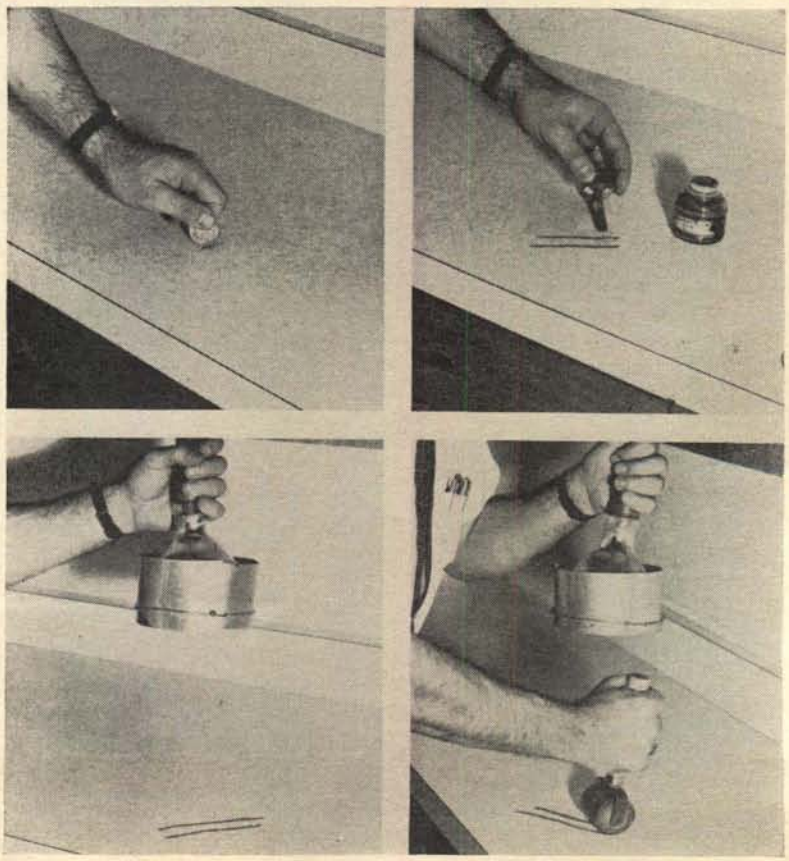


Refinishing Clinic

G. L. Bix

When the finish was removed from this headboard (which matches the dresser in the photo below, the owner decided the natural color was too lovely to hide, so applied coats of wax.

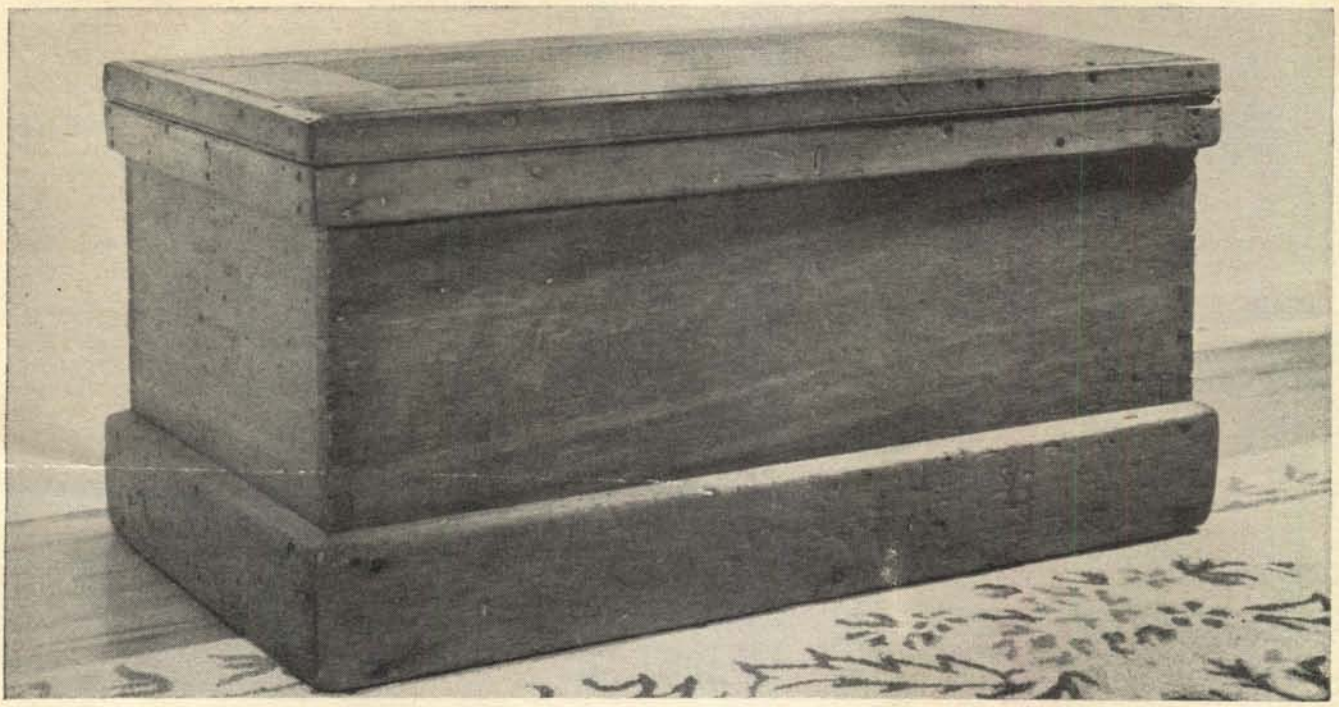
WE HAVE HAD MANY REQUESTS from readers of this column for information on how to add the appearance and color of age to antique reproductions they have built. Genuine antiques made of pine are becoming extremely rare and, of course, very expensive. A home craftsman can build antique reproductions from plans (such as are published in WORKBENCH), but the finish does present a problem. One of the most unusual materials I have ever used for giving pine the color that is found on antiques is tobacco-juice stain. Even if you do not chew tobacco, you can use this stain.

You will need a plug of chewing tobacco. If you can find a tobacco counter with a reasonably large assortment of chewing tobacco, you will see that the tobacco ranges in color from a rather light yellow to an extremely dark brown. The color of your piece of furniture will be determined to a large extent by the color of the plug of chewing tobacco you select. Break up the plug of chewing tobacco in one pint of household ammonia and let the mixture stand overnight. Strain the mixture through a discarded nylon stocking to remove the tobacco particles; the liquid is the stain.

Sand your piece of furniture carefully, then remove all sanding dust with a vacuum cleaner or a tack rag. (A tack rag is a cloth that has been soaked in a nonhardening varnish so that it is sticky and will pick up dust particles. They can be purchased). Now, apply a liberal coat of the tobacco-juice stain, using a lint-free cloth. The wood can be made progressively darker, eventually becoming almost the same color as the original plug of tobacco, by applying subsequent coats of stain. Allow three to four hours between coats. It will take five or six coats of stain to make the wood as dark as the tobacco plug. After the stain has been applied, let it cure for 48 hrs. Apply your favorite clear finish to seal the stain in the wood. The carpenter's chest, made of [illegible] stained in the manner described. A [illegible] finish was applied over the stain.

The tobacco-juice stain makes pine look older than any other material I have used. However, the "old" look of furniture can be accented by various forms of "distressing." My favorite way of distressing furniture is to beat on it with a short length of chain, or just setting it in the house for a day or two and letting the kids work it over. If you are squeamish about battering furniture with a chain, and do not have seven active children as I do, there is an easy and convenient way of artificially distressing, or spattering, the finish to give it an aged, well-worn look. The Illinois Bronze Co., Chicago, makes a little spattering attachment for aerosol paint cans that can be purchased in most paint stores for about 15 cents. This device is slipped over the head of the spray can of the color of paint you desire, and you simply spray the paint in the general direction of the piece of furniture. The distressing, or spattering, is done for you automatically. When this type of distressing is done, do use an aerosol container. It will eliminate any chance of smearing the stain or

As with the headboard above, the natural color of the wood in this dresser shows through three coats of good-quality paste wax. A fresh coat of wax is added periodically.



This carpenter's chest was built some time in the 1700's, and was refinished to look as it did originally by stripping off the old finish, then applying tobacco-juice stain, sealing it with clear finish.

other finish you already have applied. I do not recommend that the entire finish be applied from a spray can, because they normally do not permit applying a heavy enough finish to provide maximum durability.

Another subject on which we have received much mail is the application of one of the oil-type finishes. Boiled linseed oil is the most common of the oils used for finishing. While I will admit that a rubbed-on oil finish is beautiful and durable, we do not have time in this day and age to properly apply the necessary 18 to 24 coats of oil. The applications were made about every 30 days by our ancestors, and the oil was rubbed into the wood with the palm of the hand. One of our customers for whom we have stripped a number of pieces of furniture, including the dry sink shown, has devised a short-cut method for applying linseed oil. She applies a liberal coat of linseed oil, then holds an ordinary iron—set at medium heat—over each area to force the oil into the wood. She holds the iron in one spot until the oil actually bubbles, then wipes off the excess. The result is a remarkably durable finish. Incidentally, she says the oil does not damage the sole of the iron, but simply wipes off.

Applying a finish that does not change the color of the wood in any way is another subject of interest to our readers. We have tried many methods, but the only one that was at all satisfactory was the applying of paste wax. The matching walnut dresser and headboard shown have been finished in this manner, after the old finish was stripped off completely. Three coats of paste wax was applied for the finish. Periodic applications of single coats of wax maintains the protection necessary, without changing the color of the wood.

Q. We have tried various wood putties to fill dents and scratches in furniture before we stain and finish it, but find that the putty does not take the stain the same as the wood. This makes the filled places show as blotches on the finished surfaces. Do you have any suggestions?

A. I have tried many wood-putty products myself in an attempt to solve this problem. The wood putty I have the best luck with is called Miracle wood. I mix it with some of the stain I am going to use, then apply it to the gouge or scratch. When it is set, I sand it down smooth, then apply stain to the entire piece. The repaired spots are barely noticeable. △ △

After the old finish on this dry sink was removed it was sanded smooth, then boiled linseed oil was applied. A regular household iron was used to force the oil into the wood.

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WORKBENCH RESEARCH DEPARTMENT

EACH ISSUE IN THIS COLUMN WE WILL CHOOSE QUESTIONS ON HOME AND SHOP SUBJECTS FROM LETTERS SENT TO US. ONLY THOSE QUESTIONS WHICH HAVE WIDE APPEAL WILL BE ANSWERED HERE. QUESTIONS ON SPECIALIZED SUBJECTS WILL BE ANSWERED BY INDIVIDUAL LETTER FROM THE RESEARCH EDITOR'S DESK.

Dear Research Department:

Could you tell me if there is any way to detect a sewer-gas leak? We have a soil pipe vent that goes from the bathroom up through the wall, then in between the ceiling and the upstairs floor for 12 feet, then up again through the roof. At times when the wind is right we have a gas smell in the bathroom and the upstairs. For a year we have tried to find out where the leak is but since the soil pipe goes through the wall it is very hard to find it. Would appreciate any advice. Mr. H.A., Mich.

Dear Mr. H.A.:

You mention that "when the wind is right" and from this we conclude that there may be no leak at all but merely that the fumes from the vent are being carried back into the house through a window, door, or soffit from the outside. This is somewhat unusual, but by no means unknown.

Vent pipes such as the stack you mention generally have a trap at the bottom (similar to under a sink) and if the water level in this is too high or too low, improper operation of the vent can be expected. Possibly the 12 foot horizontal run in the ceiling may have a reverse pitch to it, and over a period of several years has accumulated water to the point that the vent is now partially or completely blocked. This would produce the undesirable condition you report. We feel that your best solution would be to call in a competent plumber, explain the situation, particularly in the light of the information we have given, and see if he cannot straighten it out. It is a technical problem, best handled by a competent craftsman.

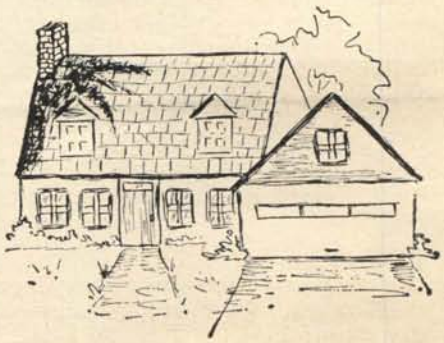
Dear Research Department:

My home is only five years old but already the roof is badly streaked from the chimney down with a black, oily stain. I have a forced-air, oil furnace. Shingles are blue asbestos. Could you suggest any way of cleaning or covering the stain? Also how can I prevent this from occurring again in the future? Mr. H.H.R., New York.

Dear Mr. H.H.R.:

The problem with your roof staining is quite common, and unfortunately, there is no simple, practical solution to prevent its recurrence; short of discarding your oil furnace and installing a gas furnace, which would be expensive and impractical. It is a characteristic of an oil furnace, even when combustion is carefully regulated, to give off, as a by-product of the combustion, an oily vapor. This is what is released up your chimney and lays on the roof. Careful regulation by a furnace man, of the air intake may reduce this vapor somewhat, but will not eliminate it.

Insofar as removing the present stain, this can be done as follows: Mix about two tablespoonfuls of trisodium phosphate thoroughly in a gallon of water and scrub the stain, later flushing with clear water. If this were done each year, there would be no accumulation from previous years to remove and the job should not take too long.



Dear Research Department:

Our home measures 20′ x 38′ on a foundation four cinder blocks high. We are thinking of replacing this crawl space and putting in a basement. Since the soil is sandy in nature, we feel that perhaps a "Yankee cellar" would be best, so as not to disturb the present foundation. We would appreciate any information that you can supply as to how to go about installing this.

Mr. E. V., New Jersey.

Dear Mr. E. V.:

Ordinarily we do not recommend installation of the so-called "Yankee cellar." We think that it would be much more satisfactory, and incidentally it ought to add greatly to the value of the property, to raise the house and then install full-height cellar walls all around. Preferable would be a poured, monolithic (solid) concrete basement wall. However, cement or cinder blocks, on a poured concrete footing, might be cheaper if you planned to do some or all of the work yourself. In this connection, be sure to enlist professional help in raising and shoring up the house during the excavation and wall building operation. Finish with a wire-reinforced concrete floor. Floor to ceiling height in the basement should be at least 6½ and better 7 feet to give adequate standing room. Height of the wall above-grade can be anything you like, from 6 or 8″ to basement-window height, depending upon the type of the structure and the lot situation. If the house is a ranch type (you did not mention in your letter) then appearance likely would dictate the lower height above grade.

If you do excavate the Yankee cellar, and most certainly so in sandy soil, you should stay at least five feet within the present foundation. The sides of the excavation should be shored up to the full height using a concrete block or reinforced concrete wall to prevent cave-ins. We must point out that such basements tend to become very damp in a humid climate and they often are most difficult to keep dry during periods of heavy rain.

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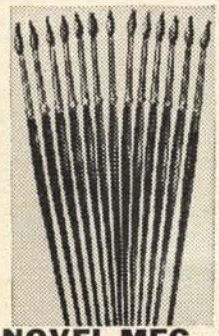

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MASTERCRAFT PLANS, Dept. 95B
7041 Olcott Avenue Chicago 31, Illinois

Dear Research Department:

We recently purchased an old farmhouse. In it is a large fireplace made of sandstone. The fireplace is beautiful except that it is completely discolored, evidently because the previous tenants used coal as fuel in it rather than wood. It definitely requires some treatment in order to regain its beauty for us, but we don't know what to do. We do not like the idea of painting the stone—would sanding help?
Mrs. K. A., Illinois.

Dear Mrs. K. A.:

There is a great difference in the nature and texture of sandstone in different localities. This confuses the problem somewhat, but still, our suggestion is this: don't paint it, don't sand it. Instead, make a determined effort to clean it. To do this, mix two tablespoonfuls of trisodium phosphate in a gallon of water. Stir thoroughly, apply with a scrub brush. It will take vigorous scrubbing to remove the soot and discoloration, but if you persist we believe that you will succeed. When the stone work is clean, let it dry very thoroughly—this is important —and then apply a coat of clear masonry sealer. This should make the stone easier to clean again later, as will be necessary if the fireplace is used.

Dear Research Department:

My patio floor is finished with slate set on cement with cemented joints in between. Recently I have been noticing an alkali that seems to come up between the slate slabs. This is unattractive and I would appreciate knowing what, if anything, can be done about it.
Mrs. M. L. A., Arizona.

Dear Mrs. M. L. A.:

The white, or grayish coating that forms in the mortar or cement joints that you describe as alkali is "efflorescence". This is due to the activity of certain chemical salts present in the cement and which are activated by moisture.

There is no certain nor reliable remedy, unfortunately. One procedure that sometimes proves effective is to wash or scrub the affected areas with a medium solution of trisodium phosphate, then flush off with clear water. Keep dry for a week or more, then coat the joints with a clear masonry sealer. This can do no harm and sometimes it will work. To mix a medium solution as described above, mix two tablespoonfuls of trisodium phosphate in an 8-qt. pail of water.

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Dear Research Department:

I have a wood lathe, saw and a few other tools that I use as a hobby. I have on occasion made objects for a friend, for example, a cherry-wood lazy susan to match his dining room furniture. This friend has now asked if I could make him some dinner plates for the serving of steak. He is tired of his steak knives being dulled by the hard china. I have seen such plates used and in this connection have three questions:
1. What kind of wood would best serve this purpose? I assume that it should be hard and close-grained, maybe maple. 2. What kind of finish would be best? A varnish would be cut and scratched and soon chip off. An application of mineral oil would be colorless, tasteless ,would not become rancid, would give some protection from water, could be renewed easily. 3. I suppose that shape and size may be to individual taste, but would be glad to receive any comments that you would care to make. Would such a plate stand up better made from a single piece of wood, or could I build it up by gluing together? Mr. P.A.O., Nebraska.

Dear Mr. P.A.O.:

You have quite a project lined up, and for the sake of others too who have expressed an interest in producing such plates, here are some suggestions. The woods we have suggested are based on their turning properties and small pores, or close grain. Second selection of woods also have excellent turning properties, but larger pores. They would require more scrubbing to keep clean. On top of the list would be beech, hard maple and birch. Substitutes might be ash, chestnut, black walnut, chestnut oak.

Your next question has to do with finish. Here we feel that there is but one choice: and this the same as for salad bowls: pure olive oil. This is the only finish that we could recommend for a wood container in which food is served.

Size and shape would be a matter of individual taste, but we would feel that a ten inch plate would be minimum, with twelve inch better, particularly if round. If oval, suggest about twelve inches on the long side. As far as glue joints are concerned, we definitely recommend a one piece bowl or plate. Glue joints often are neither desirable nor successful, even when a waterproof glue is used.

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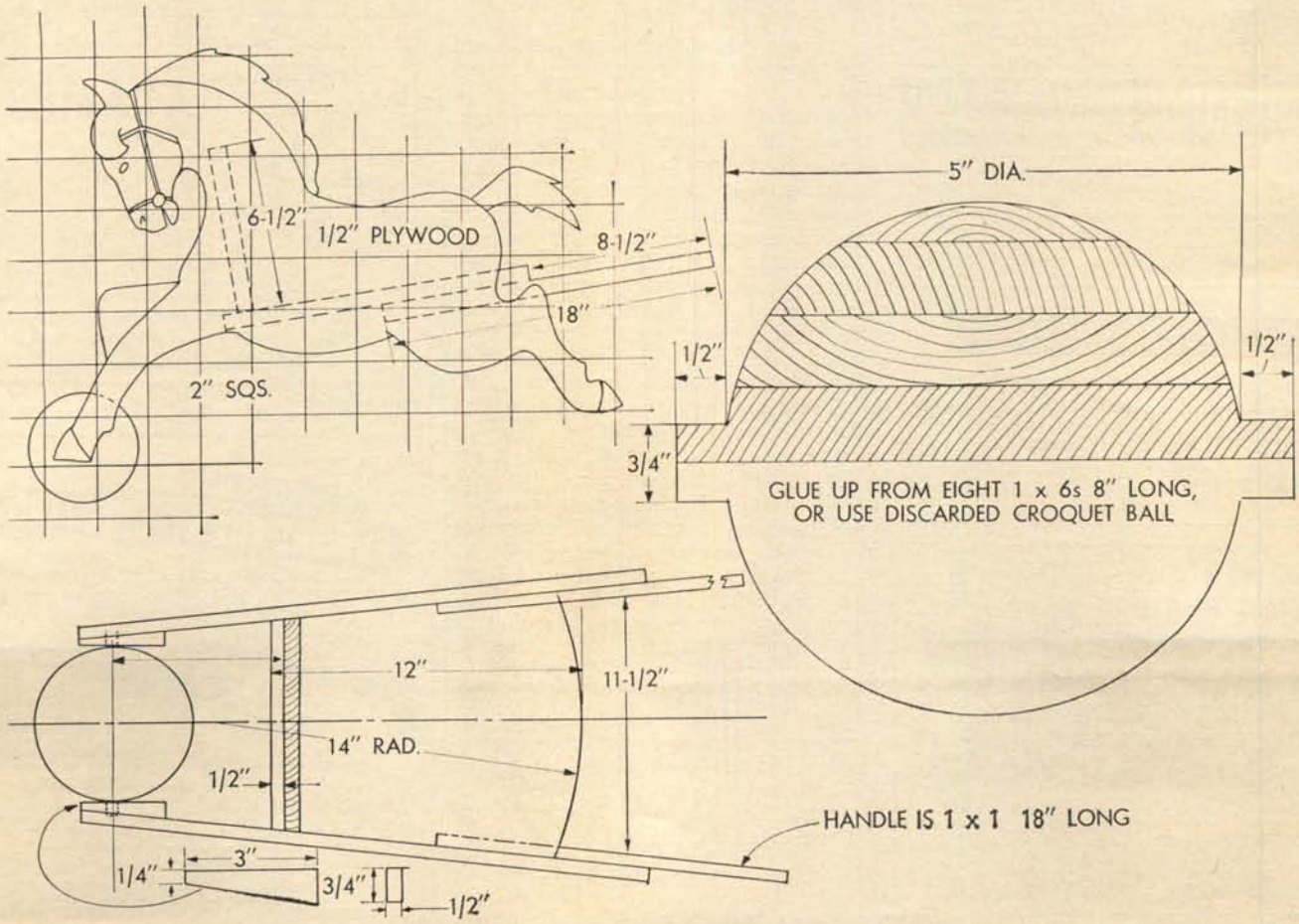
CHILDREN LOVE HORSES and wheelbarrows, and this interesting toy combines the two. Easy rolling over most surfaces is assured by using a ball for a wheel. A discarded croquet ball can be utilized, or a ball can be glued-up and turned as indicated. Start construction by making a pattern from the squared drawing for the horse outlines. Two pieces of ½-in. plywood can be tacked or clamped together and cut at the same time to assure the horse sides being identical. Sand off any saw marks and round all edges. Next, cut to size and sand smooth the two wedges that support the "axle". Drill a hole in each wedge to provide slight clearances for the ¾-in.-dia. axles. Glue and nail the wedges to the inner surface of each front hoof of the horses. Sand smooth the two 18-in. lengths of 1 x 1-in. stock for the handles, and attach the handles to the inside surfaces of the horses with 1-in. No. 8 flathead screws driven into the handles through holes drilled in the plywood horses. Countersink the screws and cover the heads. Cut the floor and backboard of the wheelbarrow from ½-in. plywood and attach to one horse only, using 1½-in. finishing nails. Set the nails and cover the heads.

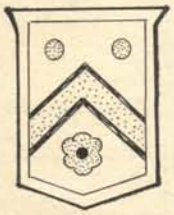
Make the ball-shape wheel now, or drill ¾-in. blind holes in a croquet ball and insert short lengths of ¾-in. dowel. "Dry fit" the second side of the wheelbarrow to the assembly and determine how long the dowel "axles" must be and cut them to length. Paint the ball in vivid, contrasting colors. Let the paint dry thoroughly. In the meantime, paint all parts of the wheelbarrow inside and out, and paint on the horses.

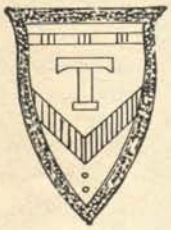
Assemble the second side to the wheelbarrow, at the same time slipping the axles, that have been wiped with paste wax, into the holes in the wedges. Use glue and finishing nails to attach the second side. Set the nails, fill the holes with wood putty and when it has set, touch up the enamel job. For an added touch of realism, staple short lengths of unraveled rope to the horses' necks to simulate manes. Strips of plastic can be glued to the heads to indicate bridles. △ △

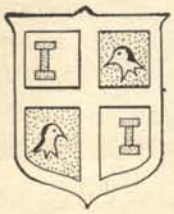


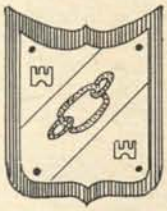
COAT OF ARMS

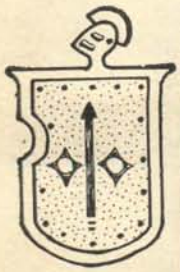
RICHARD C. REDMOND

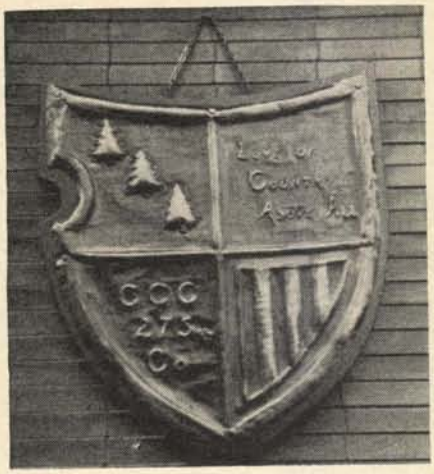








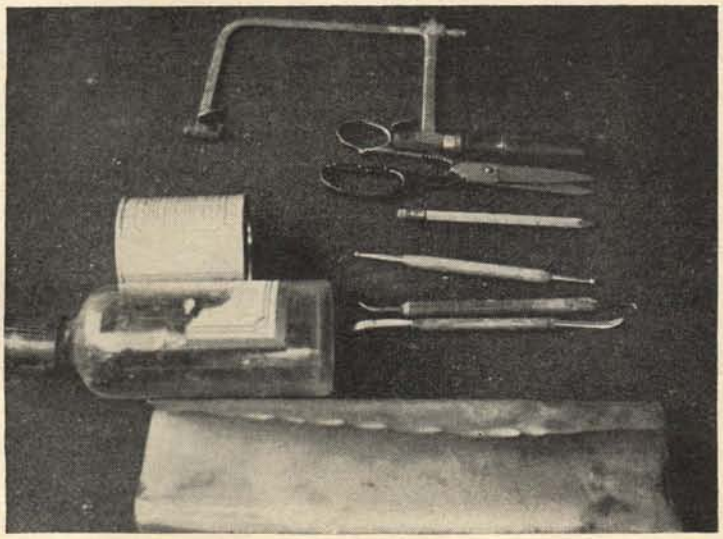




This coat of arms was made back in the days of the CCC, for a company unit.

DESIGN YOUR OWN coat of arms, making it humorous or serious in theme. Start with a 13 x 15-in. piece of ¾-in. plywood and a 12 x 14-in. sheet of 32-ga. copper. Draw your pattern on a sheet of paper, then trace through the paper on the copper with the sharp end of a leatherworking tool. Hold the metal on a magazine while working it. Remove the pattern and impress the design on the copper with the flat end of the tool. Turn the metal over and accent the edges of the embossed pattern. Now, polish the metal with steel wool. Next, dissolve some liver of sulphur, (potassium sulphide), in water and brush the solution on the areas you want dark. Dry the metal with a soft cloth, steel wool any areas that have become dulled, then apply a coat of clear varnish or lacquer for protection. △ △

Leatherworking tools, potassium sulphide, scissors and saw are the only items needed for working copper.



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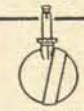

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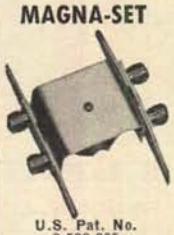

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Mural Art Center, 1038 S. La Brea, Los Angeles 19, Calif.
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Book Reviews

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FURNITURE MAKING AND CABINET WORK
By B. W. Pelton
Van Nostrand Books,
120 Alexander St., Princeton, N. J., $7.95

Included in this book are hundreds of actual constructions, complete with detailed plans and instructions for making everything from indoor and outdoor furniture to restoring antiques, finishing new furniture and refinishing old. Chapters deal with building picture windows, installing paneling, remodeling baths, wiring for appliances.

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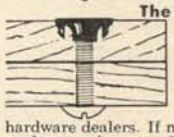

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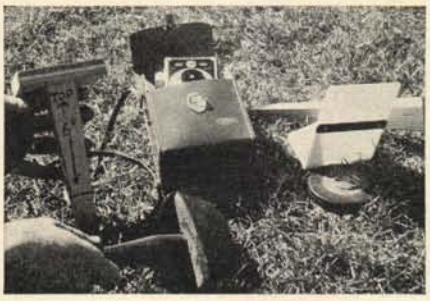
In our test we made two "platforms" by nailing plywood squares to stakes that could be driven into the earth. When leveling walls or fences, horizontal surfaces on the structures could be used, eliminating the need for our platforms. For more information on the Hoppy Split-Image Transit that comes complete with plastic target and leatherette carrying case write: Hoppy Transit, Hopkins Mfg. Corp., Emporia, Kans. △ △

Large knob adjusts image, built-in circular slide rule on side of transit converts readings to feet and inches of rise or drop.



Plywood squares were nailed to stakes to provide platforms for transit and target when they were used to check lawn grade.

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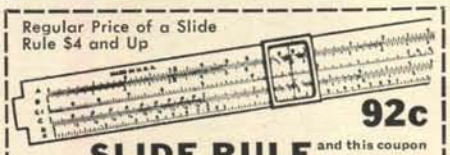

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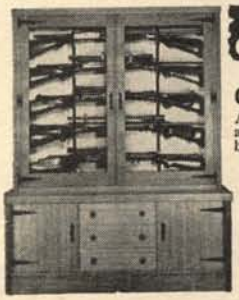

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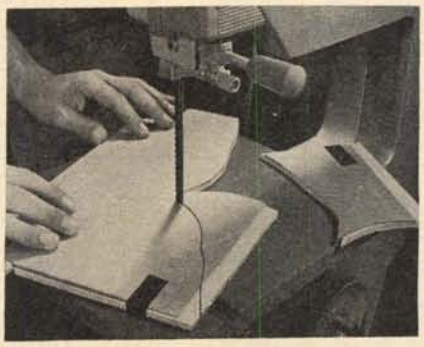
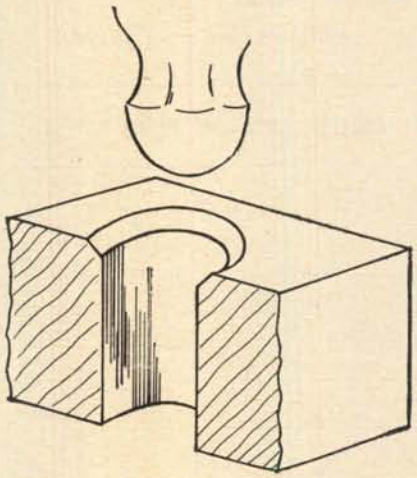
WORKBENCH SHOP TIPS

Sawing Sheet Metal



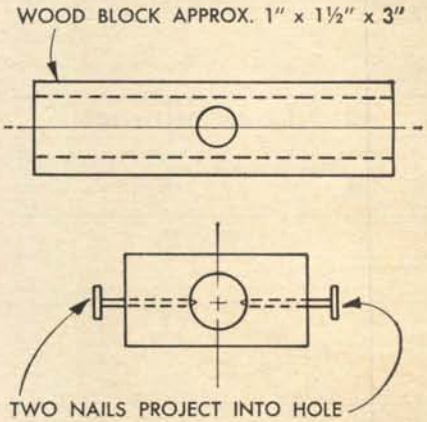
Avoid a ragged edge on the metal when band-sawing sheet stock by first taping the metal to a scrap piece of plywood. The wood backing will prevent the saw teeth from bending the cut edge.
De Cristoforo, Los Altos, Calif.

Candle-Cup Jig



In past issues there have been several tips on making candle cups from brass tubing. One item missing was a jig to hold the tubing while it was being peened. The jig I made consists of a block of wood in which a hole is bored to accept the tubing. The upper edge of the hole is beveled to match the desired angle of the peened flange.
H. Burkhart, Petersburg, Ind.

Dowel-Scoring Jig



With this simple jig you can score full-length dowels when you purchase them. Thus, when you cut them to desired length, they already are slotted to provide relief for excess glue. The jig also can be used to hold dowels when they are being cut to length.
Ray Ayers, Oxnard, Calif.

Cutting Wallboard

There is very little "give" to plasterboard, so panels should be cut to size and not forced into place. The easiest method of cutting the board is to use a straightedge and a razor blade or linoleum knife. Slice through the paper on one side, then tap the board so it breaks along the cut. The knife or razor blade then is used to cut the paper on the back.

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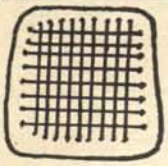

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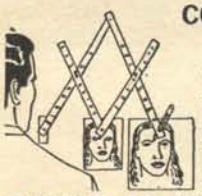

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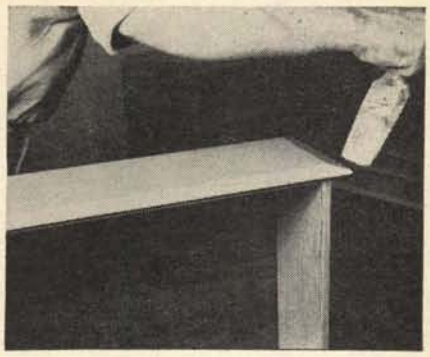
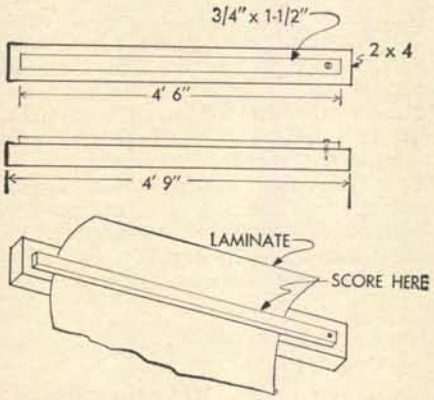
Smoother Enameling



For a brush job with enamel that will rival a spray job, use the following tips: First, do not apply too much paint; load the brush lightly. Use back-and-forth strokes and work the paint in. When a section of the job is done, pick up a little of the enamel with the brush and go over the whole surface lightly, lifting the brush before the end of the work is reached.

Cutting Plastic Laminates



Holding a straightedge on the slick surface of plastic laminates when scoring it to break it can be tricky. I made this simple jig which "clamps" the laminate under the straightedge so an ice pick or other scoring tool can be drawn along a marked line, then the laminate is lifted up to break cleanly along the straightedge. One hand holds down the straightedge, the other is free to score and break the laminate.
C. Kimbrough, Prairie Village, Kans.

Machine-Tool Stand

Partially fill a 30 or 50-gal. oil drum with sand to make a stand for a drill press, tool grinder, etc. Cut a hand hole near the top to permit reaching inside for setting mounting bolts, and to provide a way to pour in the sand.
M. Robert Beasley, Jackson, Mich.

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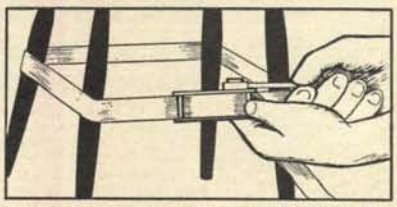

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M. M. Elsea, Moberly, Mo.

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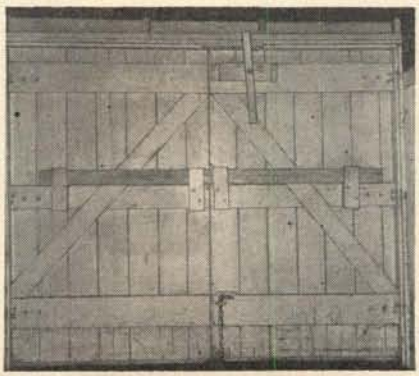
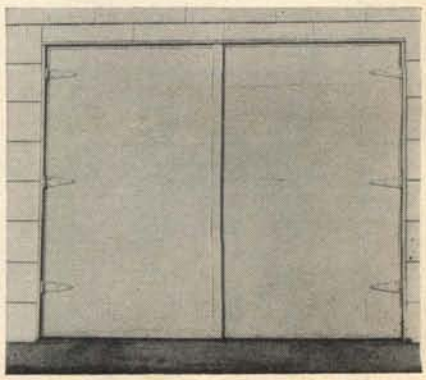
"Modernized" Garage Doors

The doors of my garage are the old-fashioned hinged type, made of vertical-positioned planks, as shown in the photo of the inside of the doors. To give them a more up-to-date look I nailed sheets of ¼-in. hardboard over the outside faces. The doors first were straightened and renailed so they swung freely. The hardboard also helps strengthen the doors. Several coats of paint completed the job.
William Horrel, Louisville, Ky.





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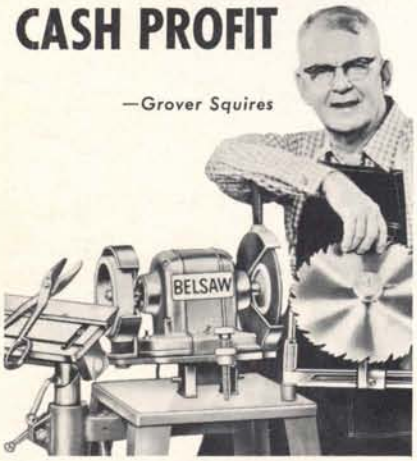

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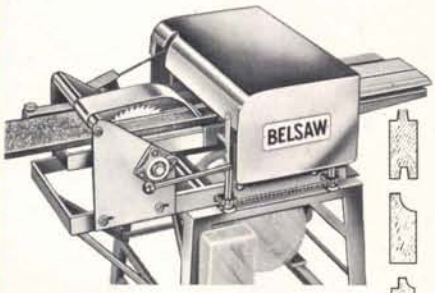

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